BRITISH COLUMBIA
MINISTRY OF FORESTS

Fort St. John Timber Supply Area

Rationale for Allowable Annual Cut (AAC) Determination

Effective March 1, 2003

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Objective of this document

This document is intended to provide an accounting of the factors I have considered and the rationale I have employed as chief forester of British Columbia in making my determination, under Section 8 of the *Forest Act*, of the allowable annual cut (AAC) for the Fort St. John Timber Supply Area (TSA). This document also identifies where new or better information is needed for incorporation in future determinations.

Description of the TSA

The Fort St. John TSA covers about 4.7 million hectares in north-eastern British Columbia and is one of six TSAs within the Prince George Forest Region. This TSA is bounded by the Alberta border to the east, the height of the Rocky Mountains to the west, the Fort Nelson TSA to the north and the Dawson Creek TSA to the south.

In 2001, the population of the Fort St. John TSA was estimated at 28,250 people. The city of Fort St. John is the largest community in the TSA, with about 60 percent of the TSA population. First Nations communities in the TSA include settlements at Halfway River, Blueberry River, Doig River and Kahntah.

About 48 percent of the Fort St. John TSA (about 2.243 million hectares) is considered productive forest land managed by the Crown. Currently about 47 percent of this area is considered available for timber harvesting under current forest management practices. The current timber harvesting land base is 1 058 540 hectares, of which 733 221 hectares are dominated by coniferous species and 325 318 hectares are dominated by deciduous species.

A large contiguous area known as the Muskwa-Kechika covers the western portion of the Fort St. John TSA as well as parts of the Fort Nelson and Mackenzie TSAs. The designation of the Muskwa-Kechika Management Area, which contains protected areas and special management zones will ensure that wilderness characteristics and wildlife habitat are maintained, while allowing resource development.

A vast plateau dominates the eastern part of the Fort St. John TSA. In the west, there are rolling hills and then the steeper terrain of the Rocky Mountains. White spruce, lodgepole pine, aspen, black spruce and subalpine fir are the main tree species occurring in the TSA and frequently grow as mixed-wood stands.

History of the AAC

In 1989, the AAC was set at 1 815 162 cubic metres, of which 900 162 cubic metres was specified for coniferous-leading stands, and 915 000 cubic metres for deciduous-leading stands. In 1996, I set the AAC at 2 015 000 cubic metres, of which 1 100 000 cubic metres was specified for coniferous-leading stands and 915 000 cubic metres for deciduous-leading stands. The 1996 determination increased the AAC by about 200 000 cubic metres per year, representing a 24-percent increase in the coniferous level and the maintenance of the deciduous level.

The total AAC of 2 015 000 cubic metres is currently apportioned by the Minister of Forests as follows:

Apportionment	Cubic metres/year	Percentage
Forest licences – replaceable	704 793	35.0
Forest licences – nonreplaceable	412 085	20.5
Pulpwood agreements	518 000	25.7
Small Business Forest Enterprise (BC Timber Sales) Program	327 218	16.2
Forest Service Reserve	20 000	1.0
Woodlot licences	32 904	1.6
Total	**2 015 000**	**100.0**

New AAC determination

Effective March 1, 2003 the new AAC for the Fort St. John will be 2 115 000 cubic metres.

This harvest level includes a partition of 1 200 000 cubic metres per year for coniferous-leading stands and 915 000 cubic metres per year for deciduous-leading stands. This AAC excludes all volume issued to woodlot licences since the 1996 determination.

This AAC will remain in effect until a new AAC is determined, which may take place within five years of this determination.

Information sources used in the AAC determination

Information considered in determining the AAC for the Fort St. John TSA include the following:

- *Fort St. John TSA Timber Supply Analysis*, British Columbia Forest Service (BCFS), September 1995;
- *Fort St. John Timber Supply Area Analysis Report*, BCFS, June 2002;
- *Fort St. John TSA: Timber Supply Review Discussion Paper*, BCFS, June 2002;
- *Fort St. John TSA Timber Supply Review: Summary of Public Input,* BCFS, 2003 (Appendix 5);
- *Forest Practices Code of British Columbia Act*, consolidated to March 2002;
- *Forest Practices Code of British Columbia Act* Regulations and Amendments, current as of March 2002;
- Forest Practices Code Guidebooks, various dates;
- Forest Practices Code Timber Supply Analysis, 1996;
- *Fort St. John Land and Resource Management Plan*, 1997;
- *Identified Wildlife Management Strategy*, February 1999;
- Fort St. John TSA inventory audit, BCFS Resources Inventory Branch, 1996;
- Letter from the Minister of Forests, dated July 28, 1994, to the chief forester, stating the Crown's economic and social objectives for the province (Appendix 3);

- Memo from the Minister of Forests, dated February 26, 1996, to the chief forester, stating the Crown's economic and social objectives for the province regarding visual resources (Appendix 4);
- Technical review and evaluation of current operating conditions through comprehensive discussions with staff of the BCFS, including the AAC determination meeting held in Fort St. John, September 23 and 24, 2002.

Role and limitations of the technical information used

Section 8 of the *Forest Act* requires the chief forester to consider biophysical as well as social and economic information in AAC determinations. A timber supply analysis, and the inventory and growth and yield data used as inputs to the analysis, typically form the major body of technical information used in AAC determinations. Timber supply analyses and associated inventory information are concerned primarily with biophysical factors—such as the rate of timber growth and definition of the land base considered available for timber harvesting—and with management practices.

However, the analytical techniques used to assess timber supply are necessarily simplifications of the real world. There is uncertainty about many of the factors used as inputs to timber supply analysis due in part to variations in physical, biological and social conditions, although ongoing science-based improvements in the understanding of ecological dynamics will help reduce some of this uncertainty.

Furthermore, technical analytical methods such as computer models cannot incorporate all of the social, cultural and economic factors that are relevant when making forest management decisions. Therefore, technical information and analysis do not necessarily provide complete answers or solutions to forest management problems such as AAC determinations. The information does, however, provide valuable insight into potential impacts of different resource-use assumptions and actions, and thus forms an important component of the information required to be considered in AAC determinations.

In determining the AAC for the Fort St. John TSA, I have considered known limitations of the technical information provided, and I am satisfied that the information provides a suitable basis for my determination.

Statutory framework

Section 8 of the *Forest Act* requires the chief forester to consider particular factors in determining AACs for TSAs and TFLs. Section 8 is reproduced in full as Appendix 1.

Guiding principles for AAC determinations

Rapid changes in social values and in our understanding and management of complex forest ecosystems mean that there is always some uncertainty in the information used in AAC determinations. In making a large number of determinations for many forest management units over extended periods of time, administrative fairness requires consistency when addressing these changes and associated uncertainties. To make my approach in these matters explicit, I have set out the following body of guiding principles. If in some specific circumstance it is necessary to deviate from these principles, I will provide a detailed reasoning in the considerations that follow.

Two important ways of dealing with uncertainty are:

(i) minimizing risk, in respect of which in making AAC determinations, I consider the uncertainty associated with the information before me, and attempt to assess the various potential current and future social, economic and environmental risks associated with a range of possible AACs; and

(ii) redetermining AACs frequently, in cases where projections of short-term timber supply are not stable, to ensure they incorporate current information and knowledge—a principle that has been recognized in the legislated requirement to redetermine these AACs every five years. The adoption of this principle is central to many of the guiding principles that follow.

In considering the various factors that Section 8 of the *Forest Act* requires me to take into account in determining AACs, I attempt to reflect as closely as possible operability and forest management factors that are a reasonable extrapolation from current practices. It is not appropriate to base my decision on unsupported speculation with respect either to factors that could work to increase the timber supply—such as optimistic assumptions about harvesting in unconventional areas, or using unconventional technology, that are not substantiated by demonstrated performance—or to factors that could work to reduce the timber supply, such as integrated resource management objectives beyond those articulated in current planning guidelines or the *Forest Practices Code of British Columbia Act* and its associated regulations (the Forest Practices Code).

The *Forest Practices Code of British Columbia Regulations* were originally approved by the Lieutenant Governor in Council on April 12, 1995, and released to the public at that time. The *Forest Practices Code of British Columbia Act* was brought into force on June 15, 1995. The timber supply implications of some of the Act and its regulation, in some cases still remain uncertain, particularly when considered in combination with other factors (for example landscape biodiversity provisions). In each AAC determination, I take these uncertainties into account to the extent possible in context of the best available information.

More recently, on November 21, 2002, government passed the new *Forest and Range Practices Act*, which will ultimately replace the *Forest Practices Code of British Columbia Act.* As the timber supply implications of this new Act and any pursuant regulations become clear and measurable, they will be accounted for in AAC determinations. Uncertainties will continue to be handled as they were under the previous legislative regime.

The eventual timber supply impacts associated with strategic land-use decisions resulting from the various planning processes—including the Fort St. John Land and Resource Management Plan (LRMP), Protected Areas Strategy, or other area-based planning processes—are often discussed in relation to current AAC determinations. Since the outcomes of these planning processes are subject to significant uncertainty before formal approval by government, it has been and continues to be my position that in determining AACs it would be inappropriate to attempt to speculate on the timber supply impacts that will eventually result from land-use decisions not yet taken by government. Thus I do not account for possible impacts of existing or anticipated recommendations made by such

planning processes, nor do I attempt to anticipate any action the government could take in response to such recommendations.

Moreover, even where government has made a formal land-use decision, it may not always be possible to fully analyze and account for the consequent timber supply impacts in a current AAC determination. In many cases, government's land-use decision must be followed by a number of detailed implementation decisions. For example, a land-use decision may require the establishment of resource management zones and resource management objectives and strategies for these zones. Until such implementation decisions are made it would be impossible to fully assess the overall impacts of the land-use decision. Nevertheless, the legislated requirement for regular AAC reviews will ensure that future determinations address ongoing plan implementation decisions.

However, where specific protected areas have been designated by legislation or by order in council, these areas are deducted from the timber harvesting land base and are no longer considered to contribute to the timber supply in AAC determinations.

A number of intensive silviculture activities have been undertaken in the past that have the potential to affect timber supply, particularly in the long term. As with all components of my determinations, I require sound evidence before accounting for the effects of intensive silviculture on possible harvest levels. Nonetheless, I will consider information on the types and extent of planned and implemented practices as well as relevant scientific, empirical and analytical evidence on the likely magnitude and timing of any timber supply effects of intensive silviculture.

Some have suggested that, given the large uncertainties present with respect to much of the data in AAC determinations, any adjustments in AAC should wait until better data are available. I agree that some data are not complete, but this will always be true where information is constantly evolving and management issues are changing. Moreover, in the past, waiting for improved data created the extensive delays that resulted in the urgency to redetermine many outdated AACs between 1992 and 1996. In any case, the data and models available today are improved from those available in the past, and will undoubtedly provide for more reliable determinations.

Others have suggested that, in view of data uncertainties, I should immediately reduce some AACs in the interest of caution. However, any AAC determination I make must be the result of applying my judgement to the available information, taking any uncertainties into account. Given the large impacts that AAC determinations can have on communities, no responsible AAC determination can be made solely on the basis of a response to uncertainty. Nevertheless, in making my determination, I may need to make allowances for risks that arise because of uncertainty.

With respect to First Nations' issues, I am aware of the Crown's legal obligations resulting from recent decisions in the British Columbia Court of Appeal and the Supreme Court of Canada. The AAC that I determine should not in any way be construed as limiting the Crown's obligations under these decisions. In this respect it should be noted that my determination does not prescribe a particular plan of harvesting activity within the TSA or TFL. My determination is also independent of any decision by the Minister of Forests with respect to subsequent allocation of the wood supply.

The British Columbia Court of Appeal decided in March 2002 that pending the final determination of the existence of aboriginal rights and title, the Crown has an obligation to consult with First Nations with respect to asserted rights and title in a manner proportional to the strength of the interests. I consider any information brought forward respecting First Nations' interests. In particular I consider information related to actions taken to protect interests, including operational plans that describe forest practices designed to seek to address such First Nations' interests. In this context, I re-iterate that my AAC determination does not prescribe a particular plan of harvesting activity, nor does it involve allocation of the wood supply to any particular party.

If, subsequent to this determination, I become aware of information respecting First Nations interests that would substantially alter the estimate of timber supply underlying my determination, I am prepared to revisit my determination.

Overall, in making AAC determinations, I am mindful of the mandate of the Ministry of Forests as set out in Section 4 of the *Ministry of Forests Act* and of my responsibilities under the *Forest Practices Code of British Columbia Act* and the *Forest Act*.

The role of the timber supply analysis

In considering the factors required under Section 8 of the *Forest Act* to be addressed in AAC determinations, I am assisted by timber supply forecasts provided to me through the timber supply review process.

For each AAC determination for a TSA, a timber supply analysis is carried out using an information package including data and information from three categories—land base inventory, timber growth and yield, and management practices. Using this set of data and a computer model (Forest Stand Simulator, or FSSIM), a series of timber supply forecasts is produced, reflecting different starting harvest levels, rates of change over time, and potential trade-offs between short- and long-term harvest levels.

From this range of forecasts, one is chosen which attempts to avoid excessive changes from decade to decade and significant timber shortages in the future, while ensuring the long-term productivity of forest lands. This is known as the 'base case' forecast, and forms the basis for comparison when assessing the effects of uncertainty on timber supply.

Because it represents only one in a number of theoretical forecasts, and because it incorporates information about which there may be some uncertainty, the base case forecast for a TSA is not an AAC recommendation. Rather, it is one possible forecast of timber supply, whose validity—as with all the other forecasts provided—depends on the validity of the data and assumptions incorporated into the computer simulation used to generate it.

Therefore, much of what follows in the considerations outlined below is an examination of the degree to which all the assumptions made in generating the base case forecast are realistic and current, and the degree to which its predictions of timber supply must be adjusted, if necessary, to more properly reflect the current situation.

These adjustments are made on the basis of informed judgement, using current available information about forest management, which may well have changed since the original information package was assembled. Forest management data is particularly subject to

change during periods of legislative or regulatory change, such as the enactment of the Code, or during the implementation of new policies, procedures, guidelines or plans.

Thus it is important to remember, in reviewing the considerations which lead to the AAC determination, that while the timber supply analysis with which I am provided is integral to those considerations, the AAC determination itself is not a calculation but a synthesis of judgement and analysis in which numerous risks and uncertainties are weighed. Depending upon the outcome of these considerations, the AAC determined may or may not coincide with the base case forecast. Judgements that may be based in part on uncertain information are essentially qualitative in nature and, as such, are subject to an element of risk. Consequently, once an AAC has been determined, no additional precision or validation may be gained by attempting a computer analysis of the combined considerations to confirm the exact AAC determined.

Base case forecast for the Fort St. John TSA

The base case harvest forecast presented in the *June 2002 Fort St. John Timber Supply Area Analysis Report* incorporated the most current available information on forest management, land base and timber yields for the TSA. The forecast included specific assumptions about the TSA that are discussed in detail in the analysis report.

Given the specific assumptions applied, the timber supply analysis separately assessed areas with coniferous-leading, deciduous-leading and small-pine stands. The results suggested that a total harvest level of 2 719 000 cubic metres could be maintained for the next three decades. Of this, for coniferous-leading stands — including the small pine projected level of 110 000 cubic metres per year — the harvest level forecast was 1 804 000 cubic metres per year over the short to long term. This harvest forecast is about 1.6 times greater than the current partitioned level set at 1 100 000 cubic metres for coniferous-leading stands. For deciduous-leading stands, the analysis indicated that an annual harvest of 915 000 cubic metres—the current deciduous harvest level—could be maintained for the next three decades before declining to the long-term harvest level of 632 000 cubic metres per year.

The 2002 and previous 1996 timber supply analyses both indicated that higher harvest levels for coniferous-leading stands were possible.

In this rationale, I will discuss many of the analysis assumptions in the context of my considerations for this AAC determination. However, for some factors, my review of the assumptions has indicated that I am satisfied the factor was appropriately modelled in the base case of the timber supply analysis. In such cases I will not discuss my considerations in detail in this document, other than to note my agreement with the approach that is already documented in the timber supply analysis report. However, some factors for which the assumptions were appropriately modelled in the analysis may warrant discussion for other reasons, such as public input, lack of clarity in the analysis report, or concerns resulting from the previous determination for the Fort St. John TSA. As a result, I may choose to provide my consideration of such factors in this rationale.

I have also considered all public input received on the data package and analysis report, and where appropriate I discuss this input in my considerations under the various factors presented in this rationale.

Consideration of Factors as Required by Section 8 of the *Forest Act*

Section 8 (8)

In determining an allowable annual cut under subsection (1) the chief forester, despite anything to the contrary in an agreement listed in section 12, must consider

a) the rate of timber production that may be sustained on the area, taking into account

(i) the composition of the forest and its expected rate of growth on the area,

Land base contributing to timber harvesting

- general comments

As part of the process used to define the timber harvesting land base in the timber supply analysis, a series of deductions were applied to the productive forest land base. These deductions account for the factors that effectively reduce the suitability or availability of the productive forest area for harvest, for ecological, economic or social reasons. The deductions in the Fort St. John TSA timber supply analysis resulted in a timber harvesting land base of 1 058 540 hectares, or about 47 percent of the productive forest area in the TSA.

I have considered all of the deductions applied in the derivation of the timber harvesting land base for the Fort St. John TSA. Those assumptions related to factors associated with the derivation of the timber harvesting land base for which, based on my thorough review, I accept the assumptions applied in the analysis, are not discussed below. These factors include the accounting in the analysis for range and wildlife habitat burns.

In addition, in this determination I will account for the exclusion of an additional 1200 hectares that have been issued to woodlot licences since the analysis was completed in order to fully account for the separate administration of woodlot licence areas. I will discuss this further under 'Reasons for decision'.

Where my consideration of the information has identified a factor which in my estimation requires discussion in this document, it is described below.

- physical, economic and non-merchantability criteria

Those portions of the TSA that are not physically accessible for harvesting, are not feasible to harvest economically, or currently considered non-merchantable were excluded from contributing to the timber harvesting land base. In the timber supply analysis, criteria for physical operability, economic operability and non-merchantability were reviewed separately and thus provided a detailed approach to defining the operable land base.

- physical operability

In the analysis, two deductions were applied for physical operability. The first deduction was applied to account for several areas located in the northwest corner of the district. These areas cover 6243 hectares and are considered inaccessible because the development costs would be prohibitively high compared to the timber values. The second deduction was 35 569 hectares based on excluding areas mapped as inoperable due to physical barriers such as steep slopes.

In a submission from Canadian Forest Products Ltd. (Canfor), the licensee states that compared to the 1995 timber supply analysis, the amount of inoperable area decreased by 69 percent. Canfor submits that a deduction of 43 000 hectares to account for inoperable areas considerably understates the actual amount of inoperable area. BCFS staff discussed this concern with Canfor staff, and BCFS staff noted that direct comparisons are not possible because in the 2002 analysis, different criteria was assigned based on excluding areas for operability, merchantability and productivity. BCFS staff submit that the new methodology for assessing physical and economic operability is an improvement compared to that applied in the 1995 analysis. Furthermore, they point out that after all the land base deductions are applied in the 2002 analysis, the size of the current timber harvesting land base is about 11 percent smaller than reported in the 1995 analysis.

District staff believe the deductions applied to account for areas that are physically inaccessible seem reasonable, especially after reviewing the larger deductions applied to account for economic operability and non-merchantability. I have reviewed the improved methodology and for this determination, I will make no adjustments regarding the assumptions for physical operability.

- economic operability

Sites with lower productivity due to sub-optimal nutrients, exposure, or moisture were considered uneconomic to harvest and were excluded in the derivation of the timber harvesting land base. For sites with mature stands, lower productivity was defined by assigning a minimum height and volume per hectare to be achieved by a specified reference age. Minimum heights ranged from 17.4 metres for small pine, 17.5 metres for spruce, subalpine fir and deciduous stands, to 19.4 metres for pine stands. For mature coniferous stands classified as accessible by conventional harvesting systems, sites were excluded if they did not achieve at least 140 cubic metres per hectare by a specific reference age, and for mature deciduous stands they were excluded if they did not achieve at least 120 cubic metres per hectare by a specific reference age. For mature coniferous stands classified as accessible by cable or helicopter, sites were excluded if they did not achieve at least 250 cubic metres per hectare by a specified reference age.

For sites with immature stands, lower productivity was based on site indices derived from the minimum height and volume criteria set for mature stands, as discussed above. For conventional areas, the site index cut-offs ranged from 9.7 metres for spruce up to 16.0 metres for pine-aspen stands and were slightly higher for cable/helicopter areas. For aspen-leading stands, the site index cut-offs ranged from 12.9 metres up to 14.7 metres.

A submission from Slocan-LP OSB (Slocan-Louisiana Pacific Oriented Strand Board) Corporation notes that the site index cut-offs used (for aspen) in the analysis are very conservative (ie – too high). They suggest that if the cut-offs applied in the Dawson Creek TSA (10.5 metres) for aspen were applied to the Fort St. John, there would be an additional 66 900 hectares of immature aspen stands and 27 300 hectares of aspen-pine stands added to the deciduous-leading timber harvesting land base.

Staff have reviewed this point and have ascertained that the 10.5 metre cut-off referenced in the Dawson Creek TSA data package refers to the aspen height at maturity (defined as 80 years) not at the 50 year reference age used to establish site indices. Moreover, in the Dawson Creek TSA timber supply analysis the minimum criteria for immature aspen

stands was based on sites achieving at least 120 cubic metres per hectare by 80 years, while the Fort St. John analysis was based on achieving at least 120 cubic metres per hectare by 100 years.

A sensitivity analysis examined the impact to the timber supply based on concerns that the criteria may be high. In this analysis, the volume requirement was reduced from 120 cubic metres to 100 cubic metres per hectare. Reducing the criteria increased the overall size of the timber harvesting land base by 95 530 hectares, and thus increased the deciduous harvest in the mid term by extending the initial harvest level by one more decade and increased the long-term harvest level by 82 000 cubic metres per year to 714 000 cubic metres per year — 13 percent higher than the base case level of 632 000 cubic metres per year.

I note the difficulty when trying to translate a minimum volume criteria for existing stands into a site index cut-off for future regenerating stands, in particular for the deciduous stands for the Fort St. John TSA. While the above noted sensitivity analysis does not precisely test the impact of using a site index cut-off of 10.5 metres for aspen stands, or achieving at least 120 cubic metres per hectare by 80 years (criteria applied in the Dawson Creek TSA timber supply analysis), I am sufficiently informed by it to accept that if the criteria has been set too high and the deciduous-leading timber harvesting land base has been underestimated, then any additional timber supply could be available to offset future reductions given that the deciduous timber supply is projected to decline after 30 years to a lower long-term level.

Regarding the criteria for coniferous-leading stands, staff expressed concern about the possible overestimation of inventory heights as indicated by the 1996 inventory report. Given that inventory heights were one of the criteria used to define economic operability, if heights are indeed overestimated, staff are concerned that the deductions applied in the analysis to account for low productivity may result in an overestimation of the coniferous timber harvesting land base.

I have considered the concerns expressed regarding this factor, and I note the difficulty in assessing which stands consistently meet the cut-offs for economic operability. I have noted this difficulty in many of the TSAs that I have reviewed; however, in the Fort St. John this assessment has been made more difficult by very limited harvesting in deciduous-leading stands, and by the results of 1996 inventory audit that indicate coniferous tree heights may be overestimated. Regarding the first point, I have considered the possible underestimation of the deciduous-leading land base as discussed below, under 'Reasons for decision'. Future performance in aspen-leading stands in the TSA will better inform the assessment of appropriate economic criteria for deciduous stands. Regarding the latter point about inventory heights, I will discuss this matter further below, under Existing forest inventory. In summary, I have reviewed the methodology, which was based on the best available information to account for economic operability, and for this determination I will make no adjustments. For the next timber supply analysis, I request that staff re-examine this factor to explore possible ways of reducing any outstanding uncertainty about economic operability.

- non-merchantable forest types

Non-merchantable forest types are physically operable stands that exceed low site criteria but that are not currently utilized or have marginal merchantability. As well, merchantability may be limited by the percentages of various species within a stand. Based on both of these criteria in the Fort St. John TSA, the non-merchantable species were excluded from the timber harvesting land base. These species include black spruce, birch and cottonwood.

Slocan-LP submits that about 25 500 hectares of cottonwood and birch could be included in the timber harvesting land base. As well, they suggest that about 5000 hectares of deciduous-leading stands that contain more than 30 percent black spruce could be utilized in their OSB plant scheduled for construction and therefore could be used to supplement the deciduous harvest level component.

District staff note that currently the cottonwood found in the area contains silicates, which are present inside and outside of the cottonwood bark, and the presence of this material can be damaging to milling equipment. As well, black spruce is not a preferred commercial species and where it is found as a major component of a stand, the stand is usually not harvested.

In Canfor's submission, they note that of the 96 689 hectares labelled as pine-black spruce, 38 314 hectares have more than 40 percent black spruce and a further 49 718 hectares have between 30 to 40 percent black spruce (total of 88 032 hectares). They submit that a significant portion of these stands are actually dominated by black spruce and therefore should not contribute to the timber harvesting land base, which is consistent with the analysis objective of excluding these types of stands. In total, these two types comprise about 12 percent of the coniferous timber harvesting land base (88 032 hectares of the total coniferous-leading area of 733 221 hectares). They state that this overestimation of the land base is substantiated by the results of their review of phase 1 of the new Vegetation Resources Inventory (VRI) conducted in the Halfway/Graham area, which suggests that the timber harvesting land base is about 9.6 percent less using the VRI data. Staff have not yet examined the new data and therefore are not certain about the comparison using the new VRI data, however they agree that stands with a high component of black spruce should not contribute to the timber supply. Additionally, Canfor states that inventory types that are currently labelled as 'S' are included in the timber harvesting land base, when operationally many of them have been found to be black spruce. On this last point, staff were not able to quantify the amount of 'S' types that should additionally be excluded from the timber harvesting land base as there is likely some overlap with the area discussed above, as well as with other deductions.

I have considered Slocan-LPs submission regarding cottonwood and birch as indicating that future deciduous forecasts may be higher than currently projected and expect that this matter will be reviewed in future timber supply analyses once operational experience is gained from harvesting these stands. I note the current exclusion of cottonwood and birch in the Fort St. John TSA analysis does not preclude their consideration for harvesting within the current AAC level. Regarding Canfor's submission about the contribution of stands that have a known high component of black spruce, for this determination, I accept

that the coniferous timber harvesting land base may be overestimated by up to 12.0 percent in the short to long term. I have accounted for this as discussed in 'Reasons for decision'.

- environmentally sensitive areas

Environmentally sensitive area (ESA) classifications—which identify areas sensitive to disturbance due to soil conditions, regeneration difficulties, avalanche risks, and/or with significant wildlife values —were used to exclude areas in the derivation of the timber harvesting land base for the Fort St. John TSA. ESA classifications of E1 (highly sensitive) or E2 (moderately sensitive) were reviewed in the timber supply analysis. Reduction factors were applied to excluded appropriate portions from the land base. The reduction factors were 90 percent for all ESAs, except 50 percent for E2-soils and 30 percent for E2-wildlife. Based on these percentages, there were a total of 48 780 hectares identified for exclusion within the productive forest land base. However, as there were many other deductions applied in deriving the timber harvesting land base which overlapped with ESAs, only 16 520 hectares were excluded solely for ESAs.

I have reviewed the exclusions applied to account for ESAs and I am satisfied that the assumptions in the analysis for areas classified as sensitive due to regeneration difficulties or avalanche risks were appropriate. As a result, I will not discuss my considerations of these two exclusions in any further detail in this rationale.

Regarding the ESA deductions applied for sensitive soils, Canfor submits that 100 percent of these ESAs should have been deducted. Furthermore they believe that the amount of ESAs for terrain stability has been significantly underestimated. They note that two large-scale terrain stability inventories have been completed that support their concern. In the Graham drainage, results indicate that an additional 6656 hectares of the contributing portion of the operable area should be removed from the timber harvesting land base. A second assessment was completed in the Tommy Lakes and Trutch Creek areas. In the Trutch Creek area, there was an 823-hectare decrease in the size of the timber harvesting land base.

BCFS staff note that the assessments in the Tommy and Trutch represent a small sample and they are not certain that they are reflective of the TSA, however they believe that the study in the Graham does provide some valuable insight into the amount of sensitive soils in this area. Having reviewed the information about the deductions applied for ESA-soils, I have considered the results of the two terrain stability studies undertaken by Canfor. With respect to the possible underestimation of sensitive soils deducted in the analysis, I accept that there is a high probability that there are more sensitive soils within the coniferous-leading timber harvesting land base than currently classified as ESA-soils. Having reviewed Canfor's assessments, BCFS staff believe that the total coniferous-leading timber harvesting land base may be overestimated by up to 6656 hectares (about 1.0 percent). On this account, I accept that this represents a risk that the coniferous timber harvesting land base may be overestimated by up to 1.0 percent in the short to long term, and I will discuss this further under 'Reasons for decision'. Regarding the likelihood that this trend applies to the deciduous timber harvesting land base and the remaining coniferous land base in the TSA, I consider this to represent an unquantified downward trend in the short to long term, which I will also discuss in 'Reasons for decision'.

- mixed–wood stands

Stands that are mostly (less than 80 percent) coniferous or deciduous with a component of deciduous or coniferous, are considered mixed-wood stands as follows. Coniferous mixed-wood stands are comprised of at least 20 percent deciduous species, and deciduous mixed-wood stands are comprised of at least 20 percent coniferous species. Within the timber harvesting land base there are 195 650 hectares (18.5 percent) of coniferous mixed-wood stands and 144 100 hectares (13.6 percent) of deciduous mixed-wood stands.

There has been limited harvesting in mixed–wood stands in the Fort St. John TSA, and hence staff are uncertain about stand dynamics influencing analysis assumptions such as regeneration and their full contribution to the current timber harvesting land base.

In the base case forecast, the coniferous harvest level includes the contribution from deciduous species, and the deciduous harvest level includes the contribution from coniferous species. I am mindful that sensitivity analyses indicates that if the deciduous component is removed from the coniferous mixed–wood stands and assumed not to contribute to the timber supply, there is a 9-percent downward pressure on the coniferous base case level. If the coniferous component is assumed not to contribute to the deciduous mixed–wood stands, there is no initial impact. Moreover, the coniferous mixed-wood stands comprise 26.7 percent of the coniferous-leading timber harvesting land base and thus represent a significant portion of the coniferous timber supply.

Given that licensees currently avoid harvesting these mixed-woods stands, I acknowledge the district staff's concern regarding the full contribution of mixed–wood stands to the timber supply. I have considered this uncertainty and I accept that there is some degree of risk to the timber supply if these stands are not consistently harvested in the future. However, I find it is not unreasonable to expect that markets will change and when the OSB plant is operational, these stands will be harvestable.

In summary, based upon my review of the information presented to me, I am not certain that the mixed–wood stands should be excluded from the timber harvesting land base at this time. Nonetheless, given the level of uncertainty about these stands, I find it reasonable to take a cautious approach in my consideration of the higher projected harvest levels for the Fort St. John TSA. I would encourage staff and licensees to examine assumptions regarding mixed–wood stands more closely prior to the next timber supply analysis. For this determination, I have considered the risk to timber supply due to the uncertainty about future harvesting of these mixed-wood stands as I have discussed below, under 'Reasons for decision'.

- small pine stands

In the last 1996 AAC determination, there was uncertainty noted about the limited harvesting history in small and marginal pine stands. Staff conducted a study that randomly sampled the shorter mature pine stands to determine appropriate criteria for selecting stands that should be included in the timber harvesting land base. Since then, staff have further reviewed the criteria, as well as licensees' current performance in achieving the requirement that at least 10 percent of their coniferous volume is to be harvested in height class 2 (10.5 to 19.4 metres) pine stands.

Based on the review of the small pine criteria and licensees' current performance, for the 2002 timber supply analysis the small pine stands were defined as lodgepole pine stands greater than 80 years of age and between 17.7 and 19.4 metres in height. The timber harvesting land base associated with this criteria was 56 698 hectares. From this land base, a separate harvest level of 110 000 cubic metres per year was projected for 16 decades, after which the level declined to the long-term harvest level of 99 000 cubic metres per year.

Although the district staff have endeavoured to better define the small pine profile, they are still uncertain about this profile due to inventory labelling and the difficulty finding merchantable small pine stands on the ground. Canfor submitted that based on reconnaissance surveys over the last 5 years, they have often found that stands assigned this (short pine) inventory label in the field can range from short black spruce to 30 metre tall white spruce stands. Staff agree that the areas labelled as small pine that are actually black spruce are likely unmerchantable, and as discussed above in *non-merchantable forest types,* I have considered the uncertainty associated with the inventory labelling of pine-spruce stands. However, if some stands are white spruce, then this timber supply would shift to contribute to the coniferous harvest level and not impact the overall timber supply projections.

The 56 698 hectares classified as small pine in the forest inventory is an important component of the overall coniferous timber supply projections for the Fort St. John TSA. The total area of pure lodgepole pine stands (>80 percent) and lodgepole pine mixes cover about 376 600 hectares, which is about half the coniferous-leading timber harvesting land base. Due to labelling inaccuracies some portion of the small pine may actually be part of the larger mix of coniferous-leading stands. Nonetheless in reviewing the district's efforts to better define and quantify the small pine profile, I understand that there is still some uncertainty about the size of the contributing area. To examine the risk to timber supply, I have reviewed an alternative harvest flow for the small pine harvest. It showed that the initial harvest level for small pine could be increased by 20 percent for the first decade and increased by 10 percent for the second decade without any impact to the remainder of the planning horizon. Based on these results, I believe that even if the area of small pine has been overestimated, the initial projected level of 110 000 cubic metres per year could likely still be achieved in the short term.

At this time, no specific data has been gathered that quantifies the amount of any potential overestimation of the small pine area. I understand that BCFS staff will continue to require that coniferous licensees target 10 percent of their harvest in areas classified as small pine stands. I have reviewed the timber supply analysis in terms of the coniferous harvest level projections and the alternative harvest flows for small pine, and I note that both indicate a high degree of stability. I encourage staff and licensees to continue to review the small pine profile and their achievement of the 10 percent target for future timber supply analyses. Given the stability of the overall timber supply for coniferous stands, I have not adjusted timber supply assumptions for small pine stands or specified a small pine partition.

- roads, trails and landings

In the analysis, a percentage of the productive forested area was excluded to account for the permanent loss of productive land due to roads, trails, and landings. Separate estimates were made for existing and future structures, to reflect both potential changes in road building practices and road network requirements over time. Estimates account for the area that is permanently removed from the timber harvesting land base.

To estimate the amount of area covered by existing roads, trails and landings, district staff calculated the length of the existing structures and applied a buffer, which ranged from 7 metres for trails to 90 metres for major highways. Based on this data, the total area removed from the productive forest for the existing structures was 6670 hectares. Staff noted that the deduction of 5838 hectares applied in the analysis to account for future roads seems to underestimate expected future losses.

Canfor staff suggest that based on their review of cut blocks in 2001, permanent road losses averaged about 4.3 percent. As well they reviewed planned permanent road construction that also projected similar losses in the future. Further they submit there is not sufficient evidence to vary substantially from the 1995 road assumptions that projected a loss of over 6 percent of the timber harvesting land base (1995 analysis). As stated above, district staff also believe that the deductions for road losses have been underestimated in the analysis. Given these concerns, the methodology for accounting for roads in the analysis was examined and it was revealed that not all of the minor roads had been accounted for in the deductions. Staff estimate that in total for existing and future roads, an additional 40 000 hectares (about 4 percent) should be deducted from the coniferous timber harvesting land base, and for future roads they estimate a similar percentage for the deciduous timber harvesting land base.

In conclusion, in reviewing the information I acknowledge that the deductions applied in the analysis underestimate the amount of existing and future roads. Therefore, I accept that the timber harvesting land base has been overestimated by about 4 percent, and I have accounted for this as discussed below, under 'Reasons for decision'.

- oil and gas activities

In the timber supply analysis, a deduction of 24 105 hectares was applied to the productive forest to account for existing utility features, such as seismic, pipe and power lines. This deduction was based on information provided by the Oil and Gas Commission. The commission noted that future seismic lines would be minor, given that the existing lines would be re-used wherever possible, and that some lines will be re-forested. Staff submit that at the time of data collection, it was current practice to re-use existing seismic lines. Based on this information staff assumed that future development of seismic lines would not be significant and therefore no additional deductions were applied in the analysis to account for future seismic losses.

Since the last AAC determination, a 3D-program of seismic line development has become more common, with lines occurring over large areas and in some cases, overlapping with other existing lines. This type of development pattern was not reviewed prior to the analysis to assess what impact it may have on the projected timber supply. In addition, staff noted the deductions applied in the analysis for the utility corridors are exclusive of losses due to existing or future well sites. In Canfor's submission, they reported that they

annually purchase between 30 000 cubic metres to 50 000 cubic metres of salvaged timber, which is mainly harvested from well sites and pipeline development. They expressed concern that the impact of current and future oil and gas activities has been significantly underestimated, given the continued heavy exploration in the region.

BCFS staff agree that the assumptions applied in the analysis have likely underestimated the impact to the timber supply in the Fort St. John from the oil and gas industry. At this time district staff have no further evidence to suggest improvements to the deductions, however they do not dispute Canfor's claim that the impact has been underestimated in the timber supply analysis by the annual amount noted above. Accordingly, for this determination I have reviewed the actual amount of harvesting associated with these activities and have considered the risk to timber supply of an overestimation of between zero to 2.5 percent as discussed below, under 'Reasons for decision'.

- non-productive burn areas

In the 1995 timber supply analysis, 94 478 hectares were classified as previously burned and not-satisfactorily-restocked (NSR), of this 42 935 hectares were deducted from contributing to the timber harvesting land base. However, a review of these areas showed that a portion had already restocked naturally or would soon restock, and thus should be considered part of the timber harvesting land base. Therefore in the 2002 analysis, a smaller portion of the burned area (35 083 hectares) was considered non-productive and excluded; the remaining area contributed to the timber harvesting land base.

Staff noted that the status of these burn areas has not been regularly updated, resulting in having to interpret the forest inventory data for use in the timber supply analysis. They expect that this matter could be improved with the completion of the VRI phase 1 of the re-inventory project for the Fort St. John TSA. For this determination, I am not aware of any information that would render the deduction applied for non-productive burn areas to be unreasonable, and I make no adjustments regarding this factor.

Existing forest inventory

The forest cover inventory for the Fort St. John TSA was collected between 1964 and 1989. For the analysis, the inventory was updated to account for harvesting and regeneration activities to December 31, 1999 and growth was projected to December 31, 2000.

The 1996 inventory audit assessed, among other things, the mature component of the inventory, evaluating differences between the existing inventory's estimate of mean mature volume per hectare for the TSA, and a new estimate obtained from the audit samples. The inventory audit confirmed staff's concerns regarding forest cover classification and height projections. The audit also confirmed concerns about existing stand volume, which is discussed in more detail under *volume estimates for existing stands.*

To improve inventories, new vegetation resources inventories (VRI) have been undertaken in priority areas for new inventories in the province. Phase 1 involves new classification of forest/vegetation polygons, and phase 2 includes ground sampling and if necessary development of local yield adjustments. Phase 1 of the new VRI is currently being developed for portions of the Fort St. John TSA.

Canfor staff have been involved with phase I of the VRI project in the Halfway/Graham area in the TSA. As noted earlier under *non-merchantable forest types*, based on their comparison between the timber harvesting land base as reported in the 2002 timber supply analysis and their examination of the VRI results, they have found that the timber harvesting land base in the Halfway/Graham area is 9.6 percent smaller when the analysis assumptions are applied to the VRI data. Canfor staff are of the opinion that a similar reduction to the coniferous timber harvesting land base would apply throughout the TSA. District staff believe that once the VRI inventory is complete for the remainder of the TSA, it may indeed show a similar trend (i.e. - smaller productive forest). Until the VRI project is complete it is difficult to extrapolate and conclude the exact magnitude of an overestimation of the timber harvesting land base at this time.

I have considered other factors where concerns were raised about the size of the timber harvesting land base, such as the merchantability of black spruce stands as discussed above in the land base section. However, until the VRI is complete and any potential overlaps are accounted for, I can not accurately adjust the timber harvesting land base further based on extrapolating the preliminary results of the VRI to the entire TSA. For this determination, I accept the current inventory for use in the analysis, subject to my considerations discussed in the next section of this rationale, as follows.

- volume estimates for existing stands

Volumes per hectare for existing natural stands (in which species and stocking have not been managed) were estimated and projected using the Variable Density Yield Prediction (VDYP) model which was developed by the former BCFS Resources Inventory Branch (now the Terrestrial Information Branch in the Ministry of Sustainable Resources Management). In the analysis, all existing coniferous stands over 30 years of age, older burn areas, and the aspen component of managed stands were estimated using VDYP. The volume of all other coniferous-leading stands after harvesting was estimated using managed stand yield tables.

As previously mentioned, an inventory audit was completed in 1996. It indicated the possibility of a 23-percent overestimation of volume for mature stands on the operable land base. The audit indicated that most of the overestimation was associated with the inventory attribute estimates, that is, the stand age and height data. As part of the 2002 timber supply analysis, the inventory audit was re-examined based on the 38 plots located on the operable land base. When the plots for non-merchantable species and low productivity stands were removed, the number was reduced to 30 plots, and the associated overestimation of the inventory stand volumes was estimated to be 18.6 percent (incorrectly reported as 8.2 percent in the analysis report). Further examination showed that coniferous volumes could be overestimated by up to 28 percent and this would result in a timber supply reduction of about 15 percent in the short to long term. As the number of audit plots located in deciduous stands was small it was not possible to draw conclusions about the impacts on the deciduous timber supply.

I recognize the problems associated with stratification of the audit information for anything other than indicating potential trends. However, given that the timber supply projections in the 2002 timber supply analysis include higher harvest levels for the coniferous stands largely due to reliance on the growth and yield information, and in the absence of better

inventory information, I will apply my judgement and accept the possibility that coniferous volumes are overestimated. Accordingly, for this determination I have considered the audit information to indicate that the coniferous timber supply may be overestimated by zero to 15 percent in the short to mid term. I will account for this overestimation as discussed further under 'Reasons for decision'.

- site productivity estimates

Inventory data includes estimates of site productivity for each forest stand. Site productivity is expressed in terms of a site index, which is based on the stand's height as a function of its age. The productivity of a site largely determines how quickly trees grow, which in turn affects the time seedlings will take to reach green-up conditions, the volume of timber that can be produced, and the age at which a stand will reach a merchantable size.

In general, in British Columbia, site indices determined from younger stands (i.e. less than 31 years old), and older stands (i.e. over 150 years old) may not accurately reflect potential site productivity. In young stands, growth often depends as much on recent weather, stocking density and competition from other vegetation, as it does on site quality. In old stands, which have not been subject to management of stocking density, the trees used to measure site productivity may have grown under intense competition or may have been damaged, and therefore may not reflect the true growing potential of the site. This has been verified in several areas of the province where studies—such as the Old-Growth Site Index (OGSI) 'paired plot' project and the 'veteran' study—as well as results from using the Site Index Biogeoclimatic Ecosystem Classification System (SIBEC) suggest that actual site indices may be higher than those indicated by existing data from old-growth forests. Such studies indicate that site productivity has generally been underestimated by the inventory file data; managed stands tend to grow faster than projected by inventory-based site index estimates from old-growth stands.

No local site productivity studies have been conducted in the Fort St. John TSA. However, district staff confirm that based on their observations of second-growth stands, site productivity has been underestimated in the inventory. According to the inventory, stands growing on good sites comprise 31 percent of the timber harvesting land base, stands on medium sites cover 51 percent of the timber harvesting land base and stands on poor sites cover 18 percent of the timber harvesting land base.

Sensitivity analyses were undertaken to examine the timber supply implications if the site index adjustments — as suggested by the provincial SIBEC and OGSI studies — were applied to stands in the Fort St. John TSA. As shown in the analysis report, results of the SIBEC study were examined and showed negligible impact to timber supply compared to the base case forecast.

After the 2002 analysis report was released, a subsequent sensitivity analysis was performed to examine the timber supply impact if site productivity estimates have been underestimated to the extent suggested by the OGSI paired plot and veteran studies. For this sensitivity analysis, for lodgepole pine, subalpine fir, spruce and aspen managed stands, the green-up ages and minimum harvestable ages were recalculated based on averaged adjusted site indices. This analysis indicated that for the coniferous timber supply, if site productivity is underestimated to the extent suggested by these OGSI studies, then the short- to mid-term harvest level could be up to 7.5 percent higher than that in the

base case. The long-term harvest level could be 8.1 percent above the base case level. The analysis did not indicate an impact from adjusting site indices for post-harvest deciduous stands.

I acknowledge that some uncertainty exists with respect to the ultimate performance of second-growth stands relative to their potential. Nonetheless, provincial data from the OGSI studies clearly demonstrate that regenerated stands are growing at a much faster rate than would be expected based on measurements from the standing old-growth inventory. Given existing silvicultural requirements, it is reasonable to expect that full stocking will occur in the majority of managed stands, and that the stands will be managed to minimize losses to pests and competing vegetation. Therefore, while the exact magnitude of the productivity increase is not certain, I believe it is highly reasonable to expect that many second-growth stands will grow more quickly than productivity estimates from old-growth stands would suggest. For this determination, I have considered that the coniferous timber supply has been underestimated by an amount of between zero and 7.5 percent in the short to mid term, and up to 8.1 percent in the long term, and I will discuss this further under 'Reasons for decision'.

- minimum harvestable ages

Minimum harvestable ages are estimates of the earliest ages at which forest stands have met minimum merchantability criteria. The minimum harvestable age assumption largely affects when second-growth stands will be available for harvest. This in turn affects how quickly existing stands may be harvested such that a stable flow of timber harvest may be maintained. In practice, many forest stands are harvested beyond the minimum harvestable age due to economic considerations and constraints on harvesting which arise from managing for other forest values such as visual quality, wildlife and water quality.

In the analysis for the Fort St. John TSA, minimum harvestable ages were based on achieving a specified minimum volume per hectare, diameter or height. The resulting minimum harvestable ages range from 51 years for thrifty lodgepole pine stands regenerating on good sites, to 169 years for white spruce stands regenerating on poor sites. The ages range from 58 to 114 years for aspen-leading stands. Approximately 65 percent of the existing natural stands on the timber harvesting land base are currently at or above minimum harvestable age.

In the analysis, the minimum harvestable ages are on average below culmination age (the age at which the average volume production is maximized) for both the coniferous and deciduous forest types. Sensitivity analysis was conducted that examined the impact to timber supply if the minimum ages were increased by 10 years; the results showed a 0.8-percent increase in the coniferous timber supply, and a 2.5-percent increase in the deciduous timber supply. Conversely, if the minimum ages are decreased by 10 years, the results showed a 1.6-percent decrease in the coniferous timber supply, and a 5.2-percent decrease in the deciduous timber supply. This shows that harvesting stands at slightly older ages would actually increase timber supply over the long term.

In the Slocan-LP submission, they note that the criteria in the timber supply analysis for one deciduous analysis unit should be 69 years, and not 78 years as shown in the report. A subsequent sensitivity analysis using the correct age showed a 2.4 percent decrease to the deciduous long-term harvest level.

As I have stated in rationales for AAC determinations for other TSAs in the province, minimum harvestable ages are subject to a fair degree of uncertainty given the highly qualitative nature of the criteria and the difficulty associated with predicting future harvest and merchantability objectives. Nonetheless, having reviewed the criteria for minimum harvestable ages, I note that the ages are below culmination age and the analysis demonstrates a small degree of sensitivity to uncertainty around these ages; as well I acknowledge the correction pointed out for aspen stands. For this determination, while I will not adjust the criteria for the minimum harvestable ages, I will account for a small unquantified underestimation of the coniferous timber supply and a 2.4 percent overestimation of the deciduous timber supply as discussed in 'Reasons for decision'.

(ii) the expected time that it will take the forest to become re-established on the area following denudation,

Expected time for forest to be re-established following harvest

I have reviewed the information regarding regeneration delays, impediments to prompt regeneration and not-satisfactorily-restocked areas, and I am satisfied that the assumptions in the analysis for these factors were appropriate. As a result, I will not discuss my considerations in detail in this rationale.

(iii) silviculture treatments to be applied to the area,

Silvicultural treatments to be applied

I have considered the information regarding incremental silviculture activities and I am satisfied that the analysis assumptions were appropriate. As a result I will not discuss my considerations of this information in detail in this rationale.

- regeneration assumptions

Canfor submits that for the last 5 years, all lodgepole pine stands have been planted, so there has been no reliance on natural regeneration (as assumed in analysis unit 2). Further they state that their current practice is to replant to spruce or pine (in analysis units 7, 8, 9 and 10). District staff agree that there has been very little reliance on natural regeneration for pine-leading stands within the Fort St. John TSA. However, although most, if not all, pine stands harvested by BC Timber Sales and forest licensees are planted, some areas experience enough natural fill-in (ingress) to exceed maximum density and warrant density control. In order to reflect this in the analysis, all pine-leading stands were projected to be reforested with 10 percent natural regeneration.

I note the points raised by the licensees, as well as the difficulty in determining exactly which proportion of which stands will be planted versus naturally regenerated. I believe the district staff have reflected their best understanding of expected future practices and any further adjustments to the modelling assumptions would likely not impact the forecasts in the short term. For this determination, I accept the regeneration assumptions but ask that staff review them for the next timber supply analysis.

- silvicultural systems

I have considered the information regarding silvicultural systems and I am satisfied that the analysis assumptions were appropriate. As a result I will not discuss my considerations of this information in detail in this rationale.

(iv) the standard of timber utilization and the allowance for decay, waste and breakage expected to be applied with respect to timber harvesting on the area,

Timber harvesting

I have reviewed the information regarding the utilization standards assumed in the analysis for the Fort St. John TSA, and I am satisfied that these factors were appropriately reflected in the analysis.

- decay, waste and breakage

Natural stand yield estimates used in the analysis reflect an accounting for volumes lost to decay, waste and breakage. The VDYP model, which is used to project volume for existing stands, incorporates estimates of volume of wood lost to decay, waste and breakage. Decay losses are built into the volume estimates, while standard waste and breakage factors are incorporated into the analysis when developing VDYP yield curves. These estimates of losses have been developed for different areas of the province based on field samples.

In the 1996 AAC rationale, I noted that staff's examination of local data found that decay estimates (based on 1976 reports) using VDYP overestimated decay losses by 15 percent for deciduous stands. Since then, former BCFS staff (now with the Ministry of Sustainable Resource Management) have reviewed the 1976 data and new biogeoclimatic (BEC) -based loss factors, as well as new decay data collected in the Dawson Creek TSA. The comparison only showed a small decrease in the deciduous net volume when using the BEC based taper and loss factors. For the 2002 timber supply analysis, the analyst has confirmed that losses were based on VDYP version 6.5a, which includes the most up-to-date decay and waste information.

I am aware that VRI phase 2, which includes estimating the amount of decay, has not been completed for the Fort St. John TSA. If any further improvements regarding this factor become available they will be considered in the next AAC determination.

I have considered the information about the decay, waste and breakage factors used in the analysis. I am satisfied that the data used to compile the standardized loss factors in the analysis are based on the most up-to-date data. As a result, I accept that the decay, waste and breakage factors used in the analysis were adequate for this determination, and I make no adjustments on this account.

(v) the constraints on the amount of timber produced from the area that reasonably can be expected by use of the area for purposes other than timber production,

Integrated resource management objectives

The Ministry of Forests is required under the *Ministry of Forests Act* to manage, protect and conserve the forest and range resources of the Crown and to plan the use of these

resources so that the production of timber and forage, the harvesting of timber, the grazing of livestock and the realization of fisheries, wildlife, water, outdoor recreation and other natural resource values are coordinated and integrated. Accordingly, the extent to which integrated resource management (IRM) objectives for various forest resources and values affect timber supply must be considered in AAC determinations.

I have reviewed the information presented to me regarding the analysis assumptions for visually sensitive areas and the caribou habitat zone and I am satisfied that the analysis has appropriately reflected the values and operational constraints for these factors. As a result, I will not discuss my considerations of these factors in detail in this rationale.

- adjacency and green-up

To manage for resources such as water quality and aesthetics, current harvesting practices limit the size and shape of cutblocks and amount of disturbance (areas covered by stands of less than a specified height), and prescribe minimum green-up heights for regenerated stands on harvested areas before adjacent areas may be harvested. Green-up requirements provide for a distribution of harvested areas and retention of forest cover in a variety of age classes across the landscape.

The FSSIM timber supply analysis model does not represent the adjacency constraints explicitly. Rather, constraints are modelled implicitly by limiting the amount of area on which stands may be below a specified green-up height. In the timber supply analysis, two types of zones were developed for visually sensitive areas and non-visually sensitive areas. In the integrated resource management zone (non-visually sensitive), the analysis modelled a maximum of 40 percent of the timber harvesting land base could be covered by stands that had not achieved 3 metres in height.

In Canfor's submission, they note there are a number of special management zones (SMZs) in the Fort St. John TSA; the Muskwa Kechika Management Zone and the Graham River areas are two SMZs with the highest potential for timber harvesting. They contend that the timber supply analysis did not account for the expected impacts in these SMZs.

District staff indicate that the intention of the *Muskwa-Kechika Management Area Act* is to maintain wildlife and its habitat, and wilderness characteristics while allowing resource development. It requires detailed plans to be in place prior to any resource development occurring. In the case of forest management activities, landscape unit objectives must be established before any activities can take place. These objectives have not yet been established and therefore timber supply measures resulting from the plan are not yet known. Given this, the district staff could not speculate about the final outcome of landscape unit planning to determine meaningful forest cover assumptions beyond those applied in the IRM zone in the base case forecast. While there is no harvesting occurring at the present in the Muskwa Kechika area, the Muskwa-Kechika Management Area management plan does not preclude future harvesting activities. Nonetheless, staff expect that once the landscape unit planning is complete a higher level of constraint will likely be required compared to the assumptions applied in the base case forecast. District staff believe that the analysis adequately accounted for forest cover constraints in the Graham River area; however if further constraints (than reflected in 2002 analysis) arise during forest development in this area in the future, they will be reflected in future timber supply analyses.

As part of the timber supply analysis, a sensitivity analysis was performed to assess the impact on timber supply of applying a more restrictive forest cover constraint. If the maximum allowable area below green-up height is reduced from 40 percent to 25 percent, there is only a negligible downward impact on the long-term timber supply level.

Having considered the information about the analysis assumptions around adjacency and green-up, I make the following observations. There is some uncertainty about forest cover restrictions yet to be determined for harvesting operations in the SMZ areas. At this time, the potential timber supply impacts of forest cover restrictions beyond those modelled in the base case are unknown and have not been quantified. However for this determination, I do not believe this uncertainty introduces a significant risk to the base case forecast. This conclusion is based on my review of the sensitivity analysis and the possibility that timber supply impacts could be mitigated through careful operational design or alternative approaches to achieving the landscape objectives.

District staff have indicated that at present, adjacency and green-up constraints are not limiting the licensees' ability to access merchantable stands. Given the stability of timber supply forecasts when higher forest cover constraints are applied, and the uncertainty about additional future constraints, I will not make any adjustments at this time. Any additional information which becomes available over the term of this determination can be incorporated into the next timber supply analysis.

- cultural heritage resources

Cultural heritage resources include archaeological and traditional use sites. Archaeological sites contain physical evidence of past human activity, whereas traditional use sites may not necessarily contain historical physical evidence but may indicate current use by a First Nation.

In 1996, a process (or model) for completing an archaeological overview assessment was designed for use within the Fort St. John TSA. However, agency staff were not confident in its use, and therefore new assessment procedures are presently being developed. By 2005, BCFS staff anticipate that the new assessment procedures will be available for use by both government and industry staff.

In the interim, district staff have implemented procedures that require an archaeologist to undertake an assessment of proposed harvesting blocks. As of spring 2002, 345 blocks had been assessed. The proposed blocks were classified on maps as having high, medium or low archaeological potential. The results of the assessment indicated that 49 percent had high potential, 17 percent had moderate potential, and the remaining 34 percent had low potential. However in most cases, staff have found that where the initial impact assessment classified an area as having high potential, in the field there was no actual archaeological evidence.

As well as the assessments, as standard procedure prior to harvesting authorization, the district staff compare proposed blocks to known recorded archaeological sites and information from traditional use studies, and generally they have found that sites are not located within the timber harvesting land base. In the few cases where licensees have found an archaeological site within a proposed block or within close proximity, they have implemented mitigative measures for protecting the site. Those encountered typically have

been incorporated into a wildlife tree patch or accommodated by slight adjustments to cutblock boundaries. Therefore in general, staff state that operations thus far have largely not been affected as a result of management for cultural heritage resources.

In the timber supply analysis, no land base exclusions were applied to specifically account for management for cultural heritage resources, as it was expected the exclusions for areas such as wildlife tree patches and riparian areas would largely account for the implications of management for cultural heritage resources.

I have considered the information about cultural heritage resources in the Fort St. John TSA. From my discussions with district staff, I believe that the management practices for these areas are being conducted appropriately at the operational level given the obligations under the Forest Practices Code to manage for these resources. The deductions applied in the analysis for wildlife tree patches, riparian and other values likely sufficiently overlap with the practices for managing cultural values in the TSA. As a result, for this determination I will make no adjustments on account of culture heritage resources. I request that district staff continue to monitor the operational trends over time so that any changes can be noted and incorporated into future timber supply analysis.

- riparian habitat

Riparian habitats occur along streams and around lakes and wetlands. The Forest Practices Code requires the establishment of riparian reserve zones (RRZs) that exclude timber harvesting, and riparian management zones (RMZs) that restrict timber harvesting, in order to protect riparian and aquatic habitats. Stream classes (e.g. S1) described in the *Riparian Management Area Guidebook* are determined based on presence of fish, occurrence in a community watershed and average channel width criteria. The stream class is used to estimate RRZs and RMZs requirements.

Based on the riparian guidebook recommendations, the riparian reserves were assigned a full area reduction and the riparian management zones were assigned reductions that ranged from zero to 50 percent depending on stream class. To account for these stream buffers, a land base reduction of 67 824 hectares was applied in the analysis. There was a further reduction of 14 022 hectares to account for an estimated amount of buffers required around lakes and wetlands.

In Canfor's submission, they stated that based on a large amount of data collected and their operational experience they are concerned that the methodology used for the classification of streams exaggerates the amount of stream buffers. District staff note that a comprehensive stream inventory has not been completed for the TSA. In review of these points, I note there may be some discrepancy regarding the exact classification of streams. However, the total area deducted is only about 3 percent of the total productive forest, which does not seem to reflect an exaggerated amount at the TSA level compared to other TSAs.

In consideration of the information provided, I am mindful that based on Canfor's operational experience there may be a trend that in the field the buffers may be less that reflected in the analysis. However following discussions with district staff, I believe that there is no further evidence to determine the exact magnitude and for this determination, BCFS staff believe that the analysis assumptions are still reasonable. I am mindful that the

assumptions may have slightly overestimated stream buffers, but to a degree that cannot be precisely quantified. For this determination I will make no adjustments, and ask that district staff review practices over the term of this determination, so that the next timber supply review for the Fort St. John TSA can incorporate estimates based on the best information available at that time.

- identified wildlife

'Identified wildlife' refers to species at risk (red- and blue-listed) and to regionally significant species which are potentially affected by forest management activities and which may not have been adequately accounted for with existing management strategies, such as those for biodiversity, riparian management, ungulate winter range or through the application of other forest cover constraints. Species at risk as defined under the Forest Practices Code also include those species that are not considered at risk provincially but which have regional populations that may be threatened. By addressing the habitat needs of 'regionally important wildlife' early on, the possibility that they will become listed provincially as threatened or endangered at a later date may be avoided.

Volume I of the IWMS was released in February 1999 and details several species which may occur in the TSA and that may require future consideration, including the bull trout, American bittern, Trumpeter swan, northern goshawk, sandhill crane, fisher, grizzly bear and mountain goat. Volume II, which has yet to be released, may identify additional species. The species identified in Volume I will be managed through the establishment of wildlife habitat areas (WHAs) and implementation of general wildlife measures (GWMs), or through other management practices specified in higher level plans.

In the Fort St. John TSA, there were no established WHAs or implemented GWMs at the time of completing the timber supply analysis. However since then, eight WHAs have been established for mountain goats and six WHAs have been established for bull trout. A review of the established WHAs shows the areas established for bull trout affect about 760 hectares of the timber harvesting land base, however the mountain goat areas do not constrain the timber harvesting land base. Nonetheless, I recognize that the Province has committed to the ongoing implementation of the IWMS with expected short-term timber supply impacts of a full one percent across the province.

Given the species known to be present in this TSA, I expect that the future establishment of WHAs could reduce the timber harvesting land base by the full one percent as described by provincial policy. As there was no accounting for the impact of IWMS in the base case forecast, I will thus take into account in this determination a one-percent impact on timber supply, which I believe accommodates the established WHAs and those yet to be established in the future.

I have considered the risk posed to the timber supply as a result of this factor, and I will discuss this further under 'Reasons for decision'.

- stand-level biodiversity

Biodiversity is defined as the full range of living organisms, in all their forms and levels of organization, and includes the diversity of genes, species and ecosystems and the evolutionary and functional processes that link them. Under the Forest Practices Code,

biodiversity in a given management unit is assessed and managed at both the stand and landscape levels.

In the Fort St. John TSA, stand-level biodiversity is managed by retaining wildlife tree patches. Based on information in the *Landscape Unit Planning Guide*, reductions for wildlife tree patch requirements were developed for both coniferous and deciduous stands by landscape units. As staff expect that wildlife tree patches will be retained over time to maintain stand structure, and are usually larger than two hectares, an area reduction of 45 392 hectares (2 percent of the productive forest or 4.3 percent of the timber harvesting land base) was applied in the timber supply analysis. The patches were also assumed to contribute to meeting seral-stage forest requirements at the landscape level.

Canfor submits that a 2 percent reduction for wildlife tree patches is insufficient. They base this submission on a recent assessment of practices on 77 of their cutblocks that shows an average of 8.2 percent of the productive forest was assigned to wildlife tree patches. The average retention target was about 4.7 percent with less than one percent overlapping with riparian buffers. As well, an assessment of 25 BC Timber Sale blocks indicated an average retention of 12 percent, with an original target of about 4.4 percent.

The district staff believe the deductions reasonably represent the targets as required by the Code. However, to review this matter further, they examined a random sample of 68 blocks. Their review showed 7.8 percent of total block area (including both the timber harvesting land base and non-timber harvesting land base) was retained as patches. However, they expect that the amount of hectares specifically retained within the timber harvesting land base for wildlife trees patches will decline over time.

I have considered the information about the provisions made in the base case to reflect management for stand-level biodiversity. Although I believe the review of the cutblocks is indicating retention levels higher than 2 percent, I note that the analysis assumptions translate to a retention of about 4.3 percent of the timber harvesting land base and I am not certain that overlapping factors — such as other deductions for non-merchantable types, low productivity site, non-commercial, etc — were fully considered in the review. Nonetheless, I am left with the impression that accounting for wildlife trees patches may be underestimated.

I acknowledge there remains some uncertainty regarding the accounting for stand-level biodiversity. As the retention of wildlife trees patches will likely decline over time and questions remain about overlapping factors, for this determination it is not clear how much additional accounting is necessary. I encourage district staff to monitor the actual level of wildlife tree patch retention to improve confidence in the assumptions for the next timber supply analysis. For this determination, I consider this factor to represent an unquantified downward pressure on timber supply as discussed in 'Reasons for decision'.

- landscape-level biodiversity

Achieving landscape-level biodiversity objectives involves maintaining forests with a variety of patch sizes, seral stages, and forest stand attributes and structures, across a variety of ecosystems and landscapes. Managing for biodiversity is based in part on the principle that this—together with other provisions in the Forest Practices Code, such as riparian management, maintenance of wildlife trees, and other forest cover objectives as

discussed throughout this document—will provide for the habitat needs of most forest and range organisms. A major consideration in managing for biodiversity at the landscape level is leaving sufficient and reasonably located patches of old-growth forests for species dependent on, or strongly associated with, old-growth forests.

In the analysis for the Fort St. John TSA, the forest cover constraints for old-seral forest, including the phase-in of the requirements for lower biodiversity emphasis options (BEOs), were applied in accordance with the *Landscape Unit Planning Guide*. Forest cover requirements for old seral forest were applied at the biogeoclimatic variant level within each landscape unit as a minimum percentage of the productive forest to be retained in stands at least 100 years, 140 years or 250 years of age, depending on the biogeoclimatic zone.

The delineation and formal designation of 'landscape units' is a key component of a sub-regional biodiversity management strategy. In the analysis, draft landscape boundaries and BEOs were applied in the base case forecast. Canfor submits that the resource management zones should have been utilized in a sensitivity analysis instead of the draft landscape unit boundaries. As well, they point out that (in the analysis) some draft landscape units have proposed emphasis options that contradict the direction of the approved LRMP. District staff note that while the resource management zones were used as the basis for the draft landscape unit boundaries, some adjustments were in fact made. As well, there may be some variation in the recommended BEOs. While I understand that there is some disagreement regarding what should form the basis upon which to apply the landscape-level biodiversity constraints, given the large non-contributing land base and type of disturbance regimes, staff advise me that the timber supply projections are not sensitive to such changes.

The assumptions applied in the timber supply analysis do not indicate any type of formal recognition or future expectation in respect to the final outcome of landscape unit planning. However, my review of the timber supply analysis and sensitivity analyses confirms that the timber supply projections are not overly sensitive to variations in landscape-level biodiversity constraints. Therefore, until the landscape unit planning is completed and plans are approved, I believe that there is little risk to the harvest level projections due to any uncertainty regarding this factor.

(vi) any other information that, in the chief forester's opinion, relates to the capability of the area to produce timber,

Fort St. John Code Pilot Project

In 2001, a pilot project in Fort St. John was established under Part 10.1 of the *Forest Practices Code of British Columbia Act*. This part of the Code allows for the development of pilot projects that could experiment with ways to improve the regulatory framework for forest practices in the province. In the Fort St. John TSA, the participants are Canfor, Slocan, Louisiana-Pacific and BC Timber Sales. The main project goal is to maintain high standards for forest practices within a management framework that is more cost efficient to implement.

In the Fort St. John TSA, the key proposal is the establishment of a strategic plan for the pilot project area, known as a sustainable forest management (SFM) plan. In preparing the

plan, the participants will be guided by a local public advisory group, First Nations, and a scientific/technical advisory committee. It is anticipated that the SFM plan will be submitted for final approval in late spring or early summer of 2003.

I am not aware of any implications that the pilot project might have for timber supply and I note this can be reviewed again at the time of the next AAC determination.

Fort St. John Land and Resource Management Plan

The Fort St. John LRMP was approved by Cabinet in October 1997. The LRMP recommended new protected areas, which comprise about 4 percent of the total Crown land area in the TSA. All designated parks have been removed from the timber harvesting land base in the analysis. As well, the LRMP provided recommendations for designating resource management zones (RMZs) as special, general or enhanced.

A major recommendation of the Fort St. John and Fort Nelson LRMPs was to designate the Muskwa-Kechika Management Area for special management. Subsequently the *Muskwa-Kechika Management Area Act* was created to ensure the maintenance of wildlife and its habitat and wilderness characteristics while allowing resource development. As noted earlier in this rationale, the purpose of the *Muskwa-Kechika Management Area Act* is to maintain wildlife and wilderness characteristics while allowing resource development. As part of the Act, forest management activities cannot occur in the area without landscape unit objectives first being established. Any timber supply measures resulting from the Muskwa-Kechika Management Area will be known once landscape unit planning is complete, and can be taken into account at that time.

First Nations considerations

With respect to First Nations in the Fort St. John TSA, I am aware of the following:

- There are eight First Nations with land base interests within the Fort St. John TSA. Four of these bands (Blueberry River, Doig River, Fort Nelson and Halfway River First Nations) have reserves in the TSA. The other four (Assumption/Dene Tha, Prophet River, Saulteau and West Moberly First Nations) do not have reserves in the TSA.
- All of the bands in the TSA are signatories to Treaty 8, which identifies their treaty rights as hunting, trapping and fishing.
- In the TSA, the Halfway River, Prophet River and West Moberly First Nations each have identified treaty land entitlement areas related to Treaty 8.
- The areas identified by the Halfway River First Nation have been under land protection measures pending conclusion of the settlement, although I have been informed that harvest planning has recently been re-initiated.
- In the Fort St. John TSA, First Nations have had limited direct involvement in the forest industry. The Doig River First Nation retains a woodlot, although very little harvesting has taken place. In addition, the West Moberly First Nation and Canfor are pursuing a joint venture to obtain a timber harvesting licence. Various First Nations' companies have been contracted to carry out forestry-related activities in the TSA.

All of the mentioned First Nations were sent the analysis report, the public discussion paper, and a letter inviting their comments. The district also completed follow-up phone

calls to each band offering to meet with them (on reserve) to provide information, and discuss the timber supply review process.

Two of the bands (Saulteau and West Moberly First Nations) responded that they might be interested in a presentation; however, the meeting was not held, as the BCFS was unable to meet First Nations' requests for funding to support consultation and capacity building. A joint letter from the First Nations stated that any increase in the AAC will have implications on treaty and aboriginal rights. I discuss this assertion further, below.

Regarding the treaty land entitlement claims of the Halfway River, West Moberly and Prophet River First Nations, I understand that no formal land-status changes have occurred, and that additional negotiations will be required. While the final outcomes of ongoing negotiations with respect to treaty land entitlements are unknown, BCFS staff have indicated that the total area identified is small relative to the size of the timber harvesting land base, and that it is not certain what portion of that area will be provided in any potential settlement. Therefore, while I remain uncertain about the exact final implications for the Fort St. John TSA, I do not expect any implications to be significant for the term of this AAC. I will make no related adjustments to the projected timber supply for this determination. However, I will consider any new information related to the claims, including conclusions of negotiations, in my next AAC determination, or sooner if warranted.

District staff have informed me that consultation on forestry matters related to forest development plans and range use plans is carried out on an on-going basis. A number of resources are utilized and various activities are carried out to ensure effective communications, as following:

- utilization of Forest District Operating Procedure on Forest Development Planning: *Consultation with First Nations within Treaty 8*, dated September 26, 2001 (as per provincial guidelines and policy);
- reference to traditional use studies and recorded archaeological sites prior to authorization of forest activities (as discussed earlier in *cultural heritage resource* section);
- district staff provide to the bands copies of maps of traditional use studies for their use;
- funding has been provided to assist some First Nations to undertake traditional use studies and an archaeological overview assessment. Also, the district has undertaken archaeological impact assessments;
- BCFS staff, as well as other agency staff offer resources including their expertise to assist bands;
- cultural awareness training and related events for BCFS staff;
- training opportunities for forest-related management for band members;
- funding for biological and socio-economic studies to be conducted in areas proposed for harvest on behalf of bands. For example: *A Landscape Level Assessment of Proposed Logging in Fontas River/Ekwan Lake Area*, 2000; *Green Spirit Report*, 1998; *Cypress Creek Traditional Land Use Study*, 1998; and various wildlife studies during 1997 to 1998.

These activities have been useful for understanding the interaction between treaty rights, traditional use activities, and resource development including timber harvesting. The communications and studies indicate that appropriately located, timed and designed harvesting can occur without negatively affecting treaty rights. In addition, current forest management in the TSA, which has been represented in the base case, includes the protection of critical wildlife habitat, biodiversity and riparian areas and will assist in maintaining the basis for wildlife- and fish-related uses. I note the assertion by the Saulteau and West Moberly First Nations that any increase in the AAC will have implications on treaty and aboriginal rights. The letter from the First Nations includes no details on the nature, location or scope of these rights, and the nature of potential infringements related to my AAC determination. Given the lack of detailed and specific information provided regarding treaty rights, and the findings based on ongoing operational-level consultations that these rights can be addressed through careful operational design, and protection of habitat, I have no evidence to indicate that these assertions exert a downward pressure on timber supply. Based on these conclusions, I will make no related adjustments for this determination.

I am aware that some of the First Nations mentioned in the first paragraph of this section have asserted title to areas within the Fort St. John TSA. For those groups involved in the treaty process, these claims are summarized in the treaty process Statements of Intent. Other groups have asserted title as part of discussions and consultations respecting operational plans. Many of the claims overlap geographically.

I am aware of some unresolved issues regarding the land exchange with Empire Valley Ranch. Negotiations on details of the land exchange are ongoing, and I am uncertain at this time on their potential outcome and how timber supply in the TSA may be affected. Therefore, at this time, I will not adjust assumptions regarding timber supply on account of the land exchange negotiations.

Based on all of these considerations related to land entitlements, to treaty rights infringements, and to other information on First Nations that has been made available to me, I conclude that no further adjustments to the timber supply projected in the base case on account of First Nations issues are required in this determination.

I will consider any new information, including any decisions on treaties with the First Nations at the time of my next AAC determination. If new information contradicting any of my conclusions becomes available during the effective term of this determination, I may re-visit this determination prior to the required time.

In the meantime, as I have noted in my 'Guiding Principles,' the AAC that I determine should not in any way be construed as limiting the Crown's obligations resulting from recent court decisions including those of the Supreme Court of Canada. In this respect, the AAC that I determine does not prescribe any particular plan of harvesting activity within the Fort St. John TSA by requiring any particular area to be harvested or to remain unharvested. My AAC determination is also independent of any decision by the Minister of Forests with respect to subsequent allocation of the wood supply.

As I make my AAC determination, I am mindful of the responsibility of other statutory decision-makers to administer the determined AAC consistently with other legislation, and with relevant court decisions respecting the interests of First Nations.

(b) the short and long term implications to British Columbia of alternative rates of timber harvesting from the area,

Alternative rates of harvest

The nature of the transition from harvesting old growth to harvesting second growth is a major consideration in determining AACs in many parts of the province. In the short term, the presence of large volumes of older forests often permits harvesting above long-term levels without jeopardizing the sustainability of future timber supply. In keeping with the objectives of good forest stewardship, AACs in British Columbia have been and continue to be determined to ensure that current and medium-term harvest levels will be compatible with a smooth transition toward the usually (but not always) lower long-term harvest level. Thus, timber supply should remain sufficiently stable so that there will be no inordinately adverse impacts on current or future generations. To achieve this, the AAC determined must not be so high as to cause later disruptive shortfalls in supply nor so low as to cause immediate social and economic impacts that are not required to maintain forest productivity and future harvest stability.

Two alternative harvest forecasts would have been possible for the Fort St. John TSA, given the current management regime and assumptions made in the analysis. The assumptions for these options are discussed in detail in the *June 2002 Fort St. John Timber Supply Area Analysis Report.*

The base case suggested that a total harvest level of 2 719 000 cubic metres per year could be maintained for the next three decades. Of this, for coniferous-leading stands — including the small pine projected level of 110 000 cubic metres per year — the harvest level forecast was 1 804 000 cubic metres per year over the long term. This harvest forecast is about 1.6 times greater than the current partitioned level set at 1 100 000 cubic metres per year for coniferous-leading stands. For deciduous-leading stands, the analysis indicated that an initial harvest of 915 000 cubic metres per year.

The first alternative forecast examined the impact of increasing the initial coniferous harvest (of 1 694 000 cubic metres per year) by 10 percent for 10 years. This harvest level depletes the existing timber supply more rapidly, which then requires second and longer-term managed stands to be available sooner than assumed in the base case forecast.

In the second alternative harvest forecast, the small pine harvest level (of 110 000 cubic metres per year) was increased by 20 percent for the first decade and increased by 10 percent for the second decade. This harvest level could be maintained without any impact to mid- or long-term timber supply. As well, the deciduous harvest level (of 915 000 cubic metres per year) was increased by 10 percent and resulted in a small decrease in the longer-term timber supply.

As mentioned earlier in this document under Base case for the Fort St. John TSA, I have reviewed the alternative harvest forecasts provided, and I am satisfied that the harvest flow presented in the base case provides the best forecast of the available timber supply, and provides a suitable basis from which to evaluate the assumptions applied in the analysis.

Community implications

A socio-economic analysis was conducted as part of the timber supply analysis, in which the impact of timber supply adjustments on local communities and the provincial economy

was assessed. The assumptions and findings of the socio-economic analysis are presented within the *June 2002 Fort St. John Timber Supply Analysis Report.* I have reviewed the information in the socio-economic analysis and I am mindful of the implications to communities of variations in the harvest level for the Fort St. John TSA.

(c) the nature, production capabilities and timber requirements of established and proposed timber processing facilities,

Timber processing facilities

I have reviewed the information regarding the existing and proposed timber processing facilities, and I am aware of the reliance of these facilities on the volume harvested in the TSA.

(d) the economic and social objectives of the government, as expressed by the minister, for the area, for the general region and for British Columbia,

Minister's letter and memorandum

The Minister has expressed the economic and social objectives of the Crown for the province in two documents to the chief forester—a letter dated July 28, 1994, (attached as Appendix 3) and a memorandum dated February 26, 1996, (attached as Appendix 4). The letter and memorandum include objectives for forest stewardship, a stable timber supply, and allowance of time for communities to adjust to harvest-level changes in a managed transition from old-growth to second-growth forests, so as to provide for community stability.

The Minister stated in his letter of July 28, 1994, that "any decreases in allowable cut at this time should be no larger than are necessary to avoid compromising long-run sustainability." He placed particular emphasis on the importance of long-term community stability and the continued availability of good forest jobs. To this end he asked that the chief forester consider the potential impacts on timber supply of commercial thinning and harvesting in previously uneconomical areas. To encourage this the Minister suggested consideration of partitioned AACs. As discussed under *small pine stands* and 'Reasons for decision', I have considered matters regarding partitioning small pine and deciduous-leading stands.

The Minister's memorandum addressed the effects of visual resource management on timber supply. In it, the Minister asked that pre-Code constraints applied to timber supply in order to meet VQOs be re-examined when determining AACs in order to ensure they do not unreasonably restrict timber supply. I am satisfied that the assumptions regarding visual resource management in the TSA, and reflected in the analysis, are consistent with the direction in the Minister's letter and the LRMP. I take the Fort St. John LRMP as an important expression of local objectives for the Fort St. John TSA.

I have considered the contents of the letter and memorandum in my determination of an AAC for the Fort St. John TSA. I am satisfied that this determination is consistent with the Minister's direction as expressed in these documents.

Local objectives

The Minister's letter of July 28, 1994, suggests that the chief forester should consider important social and economic objectives that may be derived from the public input in the timber supply review where these are consistent with government's broader objectives. The BC Forest Service provided a number of opportunities for public input through the timber supply review process for the Fort St. John TSA, including opportunities to review the data package and the timber supply analysis and to respond to the public discussion paper. A summary of this public input is reproduced in full as Appendix 5.

While space limitations do not allow me to address all of the input in this document, I have responded to some input under the appropriate factors. As with all AAC determinations, regardless of whether the input is specifically discussed in this document, I have considered all of the public input received in my determination of an AAC. Some of the opinions expressed in the input relate to items outside my mandate to take into account as chief forester under my legislated authority for an AAC determination. For example, suggestions about allocation of timber harvesting rights are within the mandate of the Minister of Forests and not the Chief Forester. Opinions were expressed from various stakeholders recommending that the AAC be increased, maintained or decreased. While I acknowledge the opinions expressed, I note that any decision that I make on the harvest level for the TSA must be predicated on sound information, and I cannot speculate about land use or other decisions which have not been taken by government.

As also mentioned elsewhere in this document, I am satisfied that the timber supply analysis provides me with a sound basis from which to assess the timber supply for the TSA. As mentioned above, local objectives have been an important consideration in my determination of an AAC for the Fort St. John TSA.

(c) abnormal infestations in and devastations of, and major salvage programs planned for, timber on the area.

Unsalvaged losses

In the base case forecast, it was estimated that 37 500 cubic metres of wood is lost annually as the result of wind and wildfire damage. District staff have reviewed the assumptions for this deduction and they believe that losses due to fire have been underestimated. They submit that the methodology for ascertaining the annual losses did not include losses for deciduous stands and also was not based on the correct land base ratio (i.e. – timber harvesting land base over total productive forest). Using the correct ratio results in doubling the annual losses to about 60 000 cubic metres for coniferous stands. This represents about a 3-percent overestimation of the coniferous timber supply.

They believe that no recovery of damaged deciduous timber should be assumed in the analysis, as in practice, any deciduous stands either blown down or burnt will likely not be salvaged. As historic data has not been gathered in the Fort St. John TSA regarding losses in deciduous stands, it is reasonable to consider that losses will be at least the volume loss (up to 6 percent) estimated for coniferous stands.

I have reviewed the information regarding unsalvaged losses in the Fort St. John TSA and I accept that losses have been underestimated. This underestimation represents a zero to

3 percent downward pressure in the short to long term for the coniferous timber supply; and zero to 6 percent risk in the short to long term for the deciduous timber supply. I have accounted for this underestimation of unsalvaged losses as discussed below, under 'Reasons for decision'.

Reasons for decision

In reaching my AAC determination for the Fort St. John TSA, I have considered all of the factors presented to me, and I have reasoned as follows.

The base case harvest forecast suggested that a total harvest level of 2 719 000 cubic metres could be maintained for the next three decades. Of this, for coniferous-leading stands, the harvest level forecast was 1 804 000 cubic metres per year over the long term, including the small pine harvest level of 110 000 cubic metres per year. This harvest forecast is about 1.6 times greater than the current partitioned level of 1 100 000 cubic metres. For deciduous-leading stands, the analysis indicated that an annual harvest of 915 000 cubic metres (current deciduous partition level) could be maintained for the next three decades before declining to the long-term harvest level of 632 000 cubic metres per year. As stated earlier in this rationale, I accept that the base case forecast provides me with a good basis from which to assess the assumptions regarding land base, management practices and timber yields for this TSA.

Section 8 of the *Forest Act* requires me to consider a number of factors in the determination of an AAC for a timber supply area. In determining an AAC, my considerations identify factors which, when considered separately, indicate that the timber supply may actually be greater or less than that projected in the base case. Some factors can be quantified and their impacts assessed with some reliability. Others may influence timber supply by introducing an element of risk or uncertainty to the decision, but cannot be reliably quantified at the time of the determination.

For the majority of the factors applicable to the Fort St. John TSA, I am satisfied that the assumptions applied in the base case harvest forecast were appropriate. Following is my consideration of those factors as they affect either the coniferous-leading or deciduous-leading stands and for which I consider it necessary in this determination to take into account implications to the timber supply projected in the base case.

Coniferous-leading stands

Factors which indicate that the timber supply projected in the base case forecast may be overestimated, and to a degree that can be quantified to some extent, are as follows:

1) Black spruce stands – there are about 88 000 hectares of pine - black spruce stands which should not be included in the timber harvesting land base. This represents a downward pressure of up to 12.0 percent in the short to long term;

2) Environmentally sensitive areas - I accept that the results of two terrain stability studies, with respect to sensitive soils in the TSA, indicates that the timber supply has been overestimated in the base case forecast by up to 1 percent in the short to long term;

3) Woodlots - in order to fully account for the removal of the area associated with all woodlots from the TSA, I accept that a reduction in the size of the timber harvesting

land base of 1200 hectares is appropriate. This represents a very small (0.1 percent) reduction in timber supply in the short to long term;

4) Road losses - I accept the deductions applied to account for road structures was underestimated and as a result the timber harvesting land base has been overestimated by about 4 percent in the short to long term;

5) Seismic activities - as the deductions in the analysis did not account for all of the impacts associated with activities of the oil and gas industry, I accept that the timber supply has been overestimated between zero and 2.5 percent in the short to long term;

6) Volume estimates for existing stands - the inventory audit reports an overestimation of the volume estimates for existing stands on the coniferous-leading component of the timber harvesting land base. I accept that the short- to mid-term timber supply may have been overestimated between zero and 15 percent in the base case;

7) Identified wildlife - I accept that the implementation of the measures of the identified wildlife management strategy, including establishment of wildlife habitat areas, will likely result in a one percent reduction in the size of the timber harvesting land base, which will have a corresponding effect on timber supply in the short to long term;

8) Unsalvaged losses – I accept that as a result of underestimating annual losses, the timber supply has been overestimated by between zero and 3 percent in the short to long term.

In addition to those factors for which some quantification is possible, there are also two factors indicating that timber supply has been overestimated, but to a degree that cannot be readily quantified;

1) Mixed-wood stands – the area classified as mixed-wood stands represents 26.7 percent of the timber supply, and due to limited forest operations currently occurring in these stands, I believe these areas represent an unquantified risk to timber supply at this time;

2) Stand-level biodiversity - there remains some uncertainty regarding the full accounting for wildlife trees patches. I accept that there is an unquantified risk to timber supply as a result of the potential underestimation of the area reserved in wildlife tree patches.

I am aware that there are also some factors that indicate that timber supply as projected in the base case of the analysis has been underestimated. These factors can be divided into those that are readily quantifiable, and those that are not. The factor for which some degree of quantification is possible is as follows:

1) Site productivity - I believe that the productivity of second growth forests will be greater than indicated by data from existing old growth forests. The exact magnitude of this underestimation is uncertain, although sensitivity analysis indicates it could range between zero and 7.5 percent in the short term, and between zero and 8.1 percent in the long term.

The unquantified factor which indicates that the base case may be underestimated is as follows:

1) Minimum harvestable ages - as minimum harvestable ages as assumed in the base case forecast are below culmination age, the analysis shows that if culmination ages were

utilized, the timber supply could be higher. I accept this factor to represent a small unquantified underestimation of the timber supply in the long term.

In consideration of the cumulative effects of the factors acting to either increase or decrease timber supply in the short term, I have the following observations.

As the coniferous timber supply was projected as an even-flow forecast, I have considered the above listed factors to act across all time horizons (i.e. – with equal impact on both the short- and long-term timber supply projections). The factors acting to decrease the timber supply cumulatively range from 18.1 percent to 38.6 percent. The one quantified factor — estimates of site productivity — acting to increase the timber supply indicates that the short-term timber supply may be 7.5 percent higher relative to the base case forecast. The one unquantified factor — minimum harvestable ages — acting to increase the timber supply indicates that the long-term forecast relative to the base case forecast may be higher. I thus note that on balance for the quantifiable factors, the timber supply may be overestimated in the base case forecast by between 10.6 to 31.1 percent. Considering the level of uncertainty afforded by the additional factors acting to decrease timber supply that could not be well quantified — mixed-wood stands and wildlife tree patches — I apply some additional caution to this range of values, and therefore accept the upper range of the full 31.1 percent as representing a reasonable approach when considering the possibility of increasing the coniferous harvest level to the level suggested in the base case forecast. In circumstances where projected base case levels are higher than the current AAC level, I generally take into account the upper range of quantifiable downward pressures to minimize the likelihood that any increase in the allowable annual cut will not subsequently require a future reduction given the current information.

The contribution from mixed-wood stands represents a significant uncertainty to the coniferous timber supply, as 26.7 percent is comprised of mixed-woods. Questions have been raised about the true operational viability of some of these stands. I am not convinced that it is realistic to assume that all these mixed-wood stands will prove economic to access and harvest in the near future, particularly where different licensees are assigned to the coniferous and to the deciduous components. Another uncertain factor is the amount of sensitive soils in the TSA. Canfor believes that there is more area covered by sensitive soils, although this has not yet been quantified.

I conclude that at this time the coniferous harvest level should not be increased to the level suggested by the base case forecast. The downward pressure of 31.1 percent introduces a significant risk to the projected coniferous harvest level of 1 804 000 cubic metres per year as reported in the base case. This results in a decrease from the projected level down to about 1 200 000 cubic metres per year, which is about 10 percent higher than the current partition level of 1 100 000 cubic metres per year. I believe that a 10 percent increase is reasonable, and furthermore, I am optimistic that future increases may be possible if the uncertainty regarding the magnitude of the downward pressures can be resolved in future determinations. As well, there are factors acting in the longer term to increase timber supply, suggesting that the mid- to long-term harvest levels could be underestimated in the base case by up to 8.1 percent, depending on whether weight is placed on the site productivity underestimates on sites currently occupied by old growth forests.

I also hold the expectation in this determination that of this, 100 000 cubic metres per year will be harvested from small pine stands, although at this time I will not partition to these areas.

Both this determination and the previous 1996 AAC determination resulted in increases to the coniferous harvest level. While I am confident about the ability of the TSA to support the increases, I strongly encourage the thorough review of the larger uncertainties prior to the next AAC determination.

Deciduous-leading stands

Factors which indicate that the timber supply projected in the base case forecast may be overestimated, and to a degree that can be quantified to some extent, are as follows:

1) Minimum harvestable ages – after correcting the minimum harvestable ages for deciduous stands, the analysis shows the timber supply could be 2.4 percent lower. I accept this factor to represent a small risk that the timber supply has been overestimated in the long term;

2) Road losses - I accept the deductions applied for expected future road structures for accessing deciduous stands has been underestimated and as a result the deciduous timber harvesting land base has been overestimated by about 4 percent in the mid to long term;

3) Seismic activities - as the deductions in the analysis did not account for all of the impacts associated with activities of the oil and gas industry, I accept that the timber supply may be overestimated between zero and 2.5 percent in the short to long term;

4) Identified wildlife - I accept that the implementation of the measures of the identified wildlife management strategy, including establishment of wildlife habitat areas, will likely result in a one percent reduction in the size of the timber harvesting land base, which will have a corresponding effect on timber supply in the short to long term;

5) Unsalvaged losses – I accept that annual losses have been underestimated, resulting in an overestimation of the timber supply by between zero and 6 percent in the short to long term.

In addition to those factors for which some quantification is possible, there are also factors indicating that timber supply has been overestimated, but to a degree that cannot be readily quantified;

1) Environmentally sensitive areas - with respect to uncertainty about accounting for sensitive soils in the deciduous stands in the TSA, until more information is gathered regarding sensitive soils in these stands, I accept that this represents an unquantified risk to the timber supply;

2) Mixed-wood stands – the area classified as mixed-wood stands represents 13 percent of the deciduous timber supply, and due to limited forest operations currently occurring in these stands, I believe these areas represent an unquantified risk to timber supply at this time;

3) Stand-level biodiversity - there remains some uncertainty regarding the full accounting for wildlife trees patches. I accept that there is an unquantified risk to timber supply as a result of the potential underestimation of the area reserved in wildlife tree patches.

In consideration of the cumulative effects of the factors acting to either increase or decrease timber supply in the short to long term, I have the following observations.

The quantified factors acting to decrease the deciduous timber supply cumulatively range from 1.0 to 9.5 percent in the short term, and up to 15.9 percent in the long term. I accept that there are additional uncertainties introduced by the accounting for environmentally sensitive areas, mixed-wood stands and stand-level biodiversity. However, as very little harvesting is currently occurring in deciduous-leading stands, I do not believe there is sufficient information at this time to substantiate a reduction to the deciduous harvest level. I believe that as better data is gathered in the future, this information will serve to clarify the uncertainties. Furthermore, I acknowledge there is potential to increase the deciduous timber supply if better data is gathered about growth dynamics and if performance validates some of the current uncertainties regarding operability, in particular cut-offs for economic operability and merchantable types. Nonetheless, I acknowledge that the current timber supply projections show that the deciduous timber supply is declining in the mid to long term, and therefore at some point in the future, the deciduous harvest level may need to be reduced.

With respect to First Nations' issues, given the Crown's legal obligations resulting from recent decisions in the British Columbia Court of Appeal and the Supreme Court of Canada, I have considered all the information brought forward respecting First Nations' interests and I have endeavoured to understand the issues carefully.

As stated in *Guiding Principles*, I re-iterate that my AAC determination does not prescribe where harvesting should occur or should not occur, nor does it prescribe who should harvest the timber supply. My AAC determination is based on many complex environmental, social and economic factors, however to be clear it establishes a target harvest level that reflects forest practices and a land base that is largely determined by government's policies and land-use decisions.

If, subsequent to this determination, I become aware of information respecting First Nations' interests that would substantially alter the forest practices or land base underlying my determination, I am prepared to revisit my determination.

In summary, in consideration of all of this information, I determine that an appropriate harvest level for the Fort St. John TSA at this time is 2 115 000 cubic metres per year.

Determination

I have considered and reviewed all the factors as documented above, including the risks and uncertainties of the information provided. It is my determination that a timber harvest level that accommodates objectives for all forest resources during the next five years, that reflects current management practices as well as the socio-economic objectives of the Crown, can be best achieved in the Fort St. John TSA by establishing an AAC of 2 115 000 cubic metres, effective March 1, 2003.

This harvest level includes a partition of:

- 1 200 000 cubic metres per year for coniferous-leading stands.
- 915 000 cubic metres per year to deciduous-leading stands.

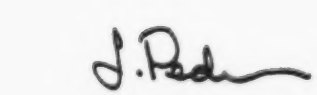
This AAC excludes all volume issued to woodlot licences since the 1996 determination.

If additional significant new information is made available to me, or major changes occur in the management assumptions upon which I have predicated this decision, then I am prepared to revisit this determination sooner than five years.

Implementation

In the period following this decision and leading to the subsequent determination, I encourage BCFS staff to undertake the tasks and studies noted below that I have also mentioned in the appropriate sections of this rationale document. I recognize that the ability of staff to undertake these projects is dependent on available staff resource time and funding. These projects are, however, important to help reduce the risk and uncertainty associated with key factors that affect the timber supply in the Fort St. John TSA. I recommend that staff carry out the following:

- continue to examine economic operability in terms of assessing which deciduous-leading stands consistently meet the minimum site index cut-offs for merchantability;
- review stand types with a known component of black spruce to resolve uncertainties about their exclusion from the timber harvesting land base;
- staff and licensees should examine assumptions regarding the full contribution of mixed–wood stands prior to the next timber supply analysis;
- encourage the completion of the VRI project;
- review regeneration assumptions regarding the proportion of which stands will be planted versus natural regeneration, as well as regenerated to deciduous or coniferous species;
- continue to review assumptions for culture heritage resources by monitoring the operational trends over time so that any changes can be noted and incorporated into future timber supply analysis;
- review stream-side practices to ensure that the estimates applied in the next timber supply analysis reflect the best information available;
- monitor the actual level of wildlife tree patch retention to improve confidence in the assumptions for the next timber supply analysis.



Larry Pedersen
Chief Forester

January 22, 2003

Appendix 1: Section 8 of the *Forest Act*

Section 8 of the *Forest Act*, Revised Statutes of British Columbia 2002, reads as follows:

Allowable annual cut

8 (1) The chief forester must determine an allowable annual cut at least once every 5 years after the date of the last determination, for

(a) the Crown land in each timber supply area, excluding tree farm licence areas, community forest areas and woodlot licence areas, and

(b) each tree farm licence area.

(2) If the minister

(a) makes an order under section 7 (b) respecting a timber supply area, or

(b) amends or enters into a tree farm licence to accomplish the result set out under section 39 (1) (a) to (d),

the chief forester must make an allowable annual cut determination under subsection (1) for the timber supply area or tree farm licence area

(c) within 5 years after the order under paragraph (a) or the amendment or entering into under paragraph (b), and

(d) after the determination under paragraph (c), at least once every 5 years after the date of the last determination.

(3) If

(a) the allowable annual cut for the tree farm licence area is reduced under section 9 (3), and

(b) the chief forester subsequently determines, under subsection (1) of this section, the allowable annual cut for the tree farm licence area,

the chief forester must determine an allowable annual cut at least once every 5 years from the date the allowable annual cut under subsection (1) of this section is effective under section 9 (6).

(3.1) If, in respect of the allowable annual cut for a timber supply area or tree farm licence area, the chief forester considers that the allowable annual cut that was determined under subsection (1) is not likely to be changed significantly with a new determination, then, despite subsections (1) to (3), the chief forester

(a) by written order may postpone the next determination under subsection (1) to a date that is up to 10 years after the date of the relevant last determination, and

(b) must give written reasons for the postponement.

(3.2) If the chief forester, having made an order under subsection (3.1), considers that because of changed circumstances the allowable annual cut that was determined under subsection (1) for a timber supply area or tree farm licence area is likely to be changed significantly with a new determination, he or she

(a) by written order may rescind the order made under subsection (3.1) and set an earlier date for the next determination under subsection (1), and

(b) must give written reasons for setting the earlier date.

(4) If the allowable annual cut for the tree farm licence area is reduced under section 9 (3), the chief forester is not required to make the determination under subsection (1) of this section at the times set out in subsection (1) or (2) (c) or (d), but must make that determination within one year after the chief forester determines that the holder is in compliance with section 9 (2).

(5) In determining an allowable annual cut under subsection (1) the chief forester may specify portions of the allowable annual cut attributable to

(a) different types of timber and terrain in different parts of Crown land within a timber supply area or tree farm licence area, and

(b) different types of timber and terrain in different parts of private land within a tree farm licence area,

(c) [Repealed 1999-10-1.]

(6) **The regional manager or district manager must determine an allowable annual cut for each woodlot licence area, according to the licence.**

(7) The regional manager or the regional manager's designate must determine a rate of timber harvesting for each community forest agreement area, in accordance with

(a) the community forest agreement, and

(b) any directions of the chief forester.

(8) In determining an allowable annual cut under subsection (1) the chief forester, despite anything to the contrary in an agreement listed in section 12, must consider

(a) the rate of timber production that may be sustained on the area, taking into account

(i) the composition of the forest and its expected rate of growth on the area,

(ii) the expected time that it will take the forest to become re-established on the area following denudation,

(iii) silviculture treatments to be applied to the area,

(iv) the standard of timber utilization and the allowance for decay, waste and breakage expected to be applied with respect to timber harvesting on the area,

(v) the constraints on the amount of timber produced from the area that reasonably can be expected by use of the area for purposes other than timber production, and

(vi) any other information that, in the chief forester's opinion, relates to the capability of the area to produce timber,

(b) the short and long term implications to British Columbia of alternative rates of timber harvesting from the area,

(c) the nature, production capabilities and timber requirements of established and proposed timber processing facilities,

(d) the economic and social objectives of the government, as expressed by the minister, for the area, for the general region and for British Columbia, and

(e) abnormal infestations in and devastations of, and major salvage programs planned for, timber on the area.

1998-29-2; 1999-10-1; 2000-6-2; 2002-25-21.

Appendix 2: Section 4 of the *Ministry of Forests Act*

Section 4 of the *Ministry of Forests Act* (consolidated 1988) reads as follows:

Purposes and functions of ministry

4. The purposes and functions of the ministry are, under the direction of the minister, to

   (a) encourage maximum productivity of the forest and range resources in British Columbia;

   (b) manage, protect and conserve the forest and range resources of the government, having regard to the immediate and long term economic and social benefits they may confer on British Columbia;

   (c) plan the use of the forest and range resources of the government, so that the production of timber and forage, the harvesting of timber, the grazing of livestock and the realization of fisheries, wildlife, water, outdoor recreation and other natural resource values are coordinated and integrated, in consultation and cooperation with other ministries and agencies of the government and with the private sector;

   (d) encourage a vigorous, efficient and world competitive timber processing industry in British Columbia; and

   (e) assert the financial interest of the government in its forest and range resources in a systematic and equitable manner.

Documents attached:

Appendix 3: Minister of Forests' letter of July 28, 1994

Appendix 4: Minister of Forests' memo of February 26, 1996

Appendix 5: Summary of Public Input

File: 10100-01

JUL 28 1994

John Cuthbert
Chief Forester
Ministry of Forests
595 Pandora Avenue
Victoria, British Columbia
V8W 3E7

Dear John Cuthbert:

Re: Economic and Social Objectives of the Crown

The *Forest Act* gives you the clear responsibility for determining Allowable Annual Cuts, decisions with far-reaching implications for the province's economy. The *Forest Act* provides that you consider the social and economic objectives of the Crown, as expressed by me, in making these determinations. The purpose of this letter is to provide this information to you.

The social and economic objectives expressed below should be considered in conjunction with environmental considerations as reflected in the Forest Practices Code, which requires recognition and better protection of non-timber values such as biodiversity, wildlife and water quality.

The government's general social and economic objectives for the forest sector are made clear in the goals of the Forest Renewal Program. In relation to the Allowable Annual Cut determinations you must make, I would emphasize the particular importance the government attaches to the continued availability of good forest jobs and to the long-term stability of communities that rely on forests.

Through the Forest Renewal Plan, the government is taking the steps necessary to facilitate the transition to more value-based management in the forest and the forest sector. We feel that adjustment costs should be minimized wherever possible, and to this end, any decreases in allowable cut at this time should be no larger than are necessary to avoid compromising long-run sustainability.

.../2

Province of
British Columbia

Minister of
Forests

Parliament Buildings
Victoria, British Columbia
V8V 1X4

In addition to the provincial perspective, you should also consider important local social and economic objectives that may be derived from the public input on the Timber Supply Review discussion papers where these are consistent with the government's broader objectives.

Finally, I would note that improving economic conditions may make it possible to harvest timber which has typically not been used in the past. For example, use of wood from commercial thinnings and previously uneconomic areas may assist in maintaining harvests without violating forest practices constraints. I urge you to consider all available vehicles, such as partitioned cuts, which could provide the forest industry with the opportunity and incentive to demonstrate their ability to utilize such timber resources.

Yours truly,

Andrew Petter
Minister

Province of British Columbia
OFFICE OF THE MINISTER

Ministry of Forests

MEMORANDUM

File: 16290-01

February 26, 1996

To: Larry Pedersen
Chief Forester

From: The Honourable Andrew Petter
Minister of Forests

Re: **The Crown's Economic And Social Objectives Regarding Visual Resources**

Further to my letter of July 29, 1994, to your predecessor, wherein I expressed the economic and social objectives of the Crown in accordance with Section 7 of the *Forest Act*, I would like to elaborate upon these objectives as they relate to visual resources.

British Columbia's scenic landscapes are a part of its heritage and a resource base underlying much of its tourism industry. They also provide timber supplies that are of significant economic and social importance to forest industry dependent communities.

Accordingly, one of the Crown's objectives is to ensure an appropriate balance within timber supply areas and tree farm licence areas between protecting visual resources and minimizing the impact of such protection measures on timber supplies.

As you know, I have directed that the policy on management of scenic landscapes should be modified in light of the beneficial effects of the Forest Practices Code. In general, the new policy should ensure that establishment and administration of visual quality objectives is less restrictive on timber harvesting. This change is possible because alternative harvesting approaches as well as overall improvement in forest practices will result in reduced detrimental impacts on visually sensitive areas. Also, I anticipate that the Forest Practices Code will lead to a greater public awareness that forest harvesting is being conducted in a responsible, environmentally sound manner, and therefore to a decreased public reaction to its visible effects on the landscape. In relation to the Allowable Annual Cuts determinations that you make, please consider the effects that the new policy will have in each Timber Supply Area and Tree Farm Licence.

.../2

In keeping with my earlier letter, I would re-emphasize the Crown's objectives to ensure community stability and minimize adjustment costs as the forest sector moves to more value-based management. I believe that the appropriate balance between timber and visual resources will be achieved if decisions are made consistent with the ministry's February 1996 report *The Forest Practices Code: Timber Supply Analysis*.

Finally, in my previous letter I had asked that local economic and social objectives be considered. Please ensure that local views on the balance between timber and visual resources are taken into account within the context of government's broader objectives.

Andrew Petter
Minister of Forests

Fort St. John Timber Supply Area
Timber Supply Review

Summary of Public Input

BC Ministry of Forests

Fort St. John Forest District
8808-72 Street
Fort St. John, BC V1J 6M2

January, 2003

This is a summary of the public input received on the Timber Supply Review in the Fort St. John Timber Supply Area. This summary does not assess the feasibility or validity of the input or whether it relates to the clearly defined mandate of the chief forester in the allowable annual cut determination.

Fort St. John Timber Supply Area

Background

As part of the review of timber supply in the Fort St. John Timber Supply Area (TSA), two opportunities were provided for public input. The first followed release of the Fort St. John TSA *Data Package* and *Information Report* in November 2000. The *Information Report* was a non-technical summary of the draft data and management assumptions that were to be applied in reviewing the timber supply for the Fort St. John TSA. A 30-day review period, ending December 29, 2000, was provided for the public to comment on these documents.

On June 25, 2002, the British Columbia Forest Service released the *2002 Fort St. John Timber Supply Area Analysis Report* and *Public Discussion Paper*. The public was encouraged to review and comment on the accuracy of the information in these documents and to provide additional information during the 60-day review period that ended August 26, 2002.

This report summarizes the input received during both public review periods. This information was provided to the chief forester for his consideration when he reviewed the allowable annual cut (AAC) for the Fort St. John TSA. The first section of this summary outlines the public review process implemented by the Forest Service, and describes the types of public input received. The second section summarizes the public input in sufficient detail to indicate the range of input received. The original submissions (with personal identifiers removed in accordance with the *Freedom of Information and Protection of Privacy Act*) can be reviewed at the Fort St. John Forest District office in Fort St. John.

Public Review Process and Response

Staff from the Fort St. John Forest District, as well as Prince George regional staff, actively solicited public input on the Timber Supply Review in the Fort St. John TSA through the following actions:

- about 75 copies of the *Data Package* and *Information Report*, and more than 100 copies of the *Analysis Report* and *Public Discussion Paper* were mailed to stakeholders in the TSA, including First Nations, licensees, local governments and environmental groups. Meetings or presentations were offered.
- the *Data Package* and *Analysis Report* were available at the district office and the Prince George regional office in Prince George. About 50 copies of the documents were picked up.
- newspaper advertisements were placed, advising of the availability of all documents for review by the public.
- copies of all the documents were made available to the local media. Interviews were conducted with the local radio and newspaper.
- referrals were made to the Ministry of Forests' website where documents were available to download.

The forest district and regional offices received three written submissions on the *Data Package* and six submissions on the *Analysis Report* (see Appendix 1).

Public Input

In this section, public input on the information presented in the Timber Supply Review documents for the Fort St. John TSA is summarized under the following headings:

- Data Package (and Information Report)
- Timber Supply Area Analysis Report (and Public Discussion Paper)
- Other comments

Data Package

Deciduous Types

Slocan-LP OSB Corporation questions the cottonwood licences referred to in Table 2 of

the *Data Package* saying they know of no such licences in the Fort St. John TSA. They express concern about how tracking of the harvest will occur, if the licence is not in fact stand-type specific but refers to the cottonwood component of newly-awarded deciduous licences.

Non-Commercial Brush
Canadian Forest Products (Canfor) expresses disagreement with the assertion that all non-commercial brush types are unlikely sites for timber production and should be removed from the timber harvesting land base (THLB). The company says a portion of these sites could and should be reforested, and provides the following reasons:

- the previous Timber Supply Review (TSR1) assumed these areas would be reforested.
- these types on mesic or subhygric sites within cutblocks are routinely and successfully reforested.
- some of the company's most successful FRDA work was done on these types.
- these sites are the result of heavy competition after natural disturbances in the past and frequently occur on the better sites.

Problem Forest Types
Slocan-LP suggests changes to Table 10 regarding types identified as leading species "not aspen." Canfor questions the removal from the timber supply analysis of Sx stands with more than 30 per cent black spruce. The company says if black spruce is the leading species, it may be appropriate to remove the stand; however, if white spruce is the leading species (regardless of the black spruce content), the stand is typically merchantable.

Canfor requests clarification about wording in Table 14 and accompanying text. They note that mixedwood stands with coniferous-leading have been logging in the past and are included in their forest development plan. The bigger question, according to Canfor's submission, is why, given the marginal economics of hauling aspen lengthy distances, no aspen-leading mixedwood types are excluded when coniferous mixedwood types are excluded.

Sites with Low Timber-Growing Potential
Slocan-LP expresses the opinion that the minimum age requirements are too low for determining the site index cut-offs for deciduous stands, saying the result will be the exclusion of stands that meet the minimum criteria but are past the priority cutting age. The company also questions the rationale for increasing the minimum site index from 13 metres in TSR1 to 18.2 metres in this Timber Supply Review (TSR2), saying this will result in a vast amount of harvestable deciduous stands being excluded from the analysis.

Slocan-LP and Canfor both question the increase in the site index cut-off for pine (from 9.4 metres in TSR1 to 14.2 metres in TSR2). Canfor says this seems unwarranted as they have demonstrated significant timber harvesting over the last five years (and have more planned) in pine stands with lower site indices than the ones proposed.

Canfor says the volume/hectare criterion for conventional ground harvesting should be reduced for spruce stands to 100 cubic metres/hectare. They offer the following reasons:

- open-grown spruce stands generally have good tree size, which is the primary limiting factor on merchantability.
- these stands have been harvested and continue to be harvested. E.g., Canfor's 2000 forest development plan has 15 cutblocks with volumes between 100 and 139 cubic metres/hectare that are ground-based clearcuts with reserves.

Canfor also says the cable/aerial volume criterion should be reduced to 200 cubic metres/hectare (from 250), and offers the following reasons:

- volume/hectare is not as important as tree

value in making these systems economic.
- consistency with demonstrated performance, since Canfor has been logging with cable systems on sites with volumes less than 250 cubic metres/hectare.

Economic Accessibility
Canfor questions the 100 per cent exclusion of certain compartments, and asks for further clarification of the rationale. The company says their experience is that no compartments have been inaccessible due to economics for coniferous timber extraction. Further, Canfor says if the excluded areas are, as indicated in the text, in the northeast portion of the TSA, there is existing oil and gas access to much of the area and it's not normally uneconomic to develop.

Environmentally Sensitive Areas
Slocan-LP expresses concern about a "double constraint" and suggests that areas of importance to wildlife (Ew1 and Ew2) should only be applied where there is no overlap with identified wildlife areas.

Roads, Trails and Landings
Canfor expresses concerns that the deductions for roads, trails and landings may be overstated, and makes the following points:
- cut permit roads and roads within cutblocks are typically reforested except for the 10-metre running surface and ditch, even if the original right-of-way may be 20 metres for slash disposal reasons.
- seismic lines are normally reforested if not used for road access.

Forest Inventory
Slocan-LP says the reliability of diameter data in the forest cover information is questionable and recommends a sensitivity analysis to address the uncertainty.

Minimum Harvestable Age
Canfor questions why the minimum harvestable age (MHA) is calculated on the age required to achieve 120 cubic metres/hectare when the minimum volume for harvesting is 140 cubic metres/hectare.

George Hauber (president, Peace River Woodlot Association) says that according to the *Data Package*, timber is supposedly mature when it reaches 120 cubic metres/hectare. He points out that much of the TSA's timber is immature pine (under 60 years old) due to fires in the 1940s, although the volume exceeds 120 cubic metres/hectare. Hauber says this timber should be considered for commercial thinning instead of clearcutting; otherwise, he says, the AAC will be very low in later years if all this area is logged when it reaches the magic number in volume instead of age.

Slocan-LP raises two concerns about the MHAs:
- the minimum volume requirement should be the same as that used to define problem forest types.
- aspen, cottonwood and deciduous-leading units should use a consistent average minimum diameter of 12.5 cm. How was the increase to 17.5 cm for cottonwood and deciduous-leading determined?

Regeneration Factors
Canfor and Slocan-LP raise a number of specific questions about regeneration assumptions:
- why is it assumed that spruce will be planted in analysis units 5 and 6 which are pure deciduous?
- units 1 to 4 do not include a component of managed deciduous regeneration. As it's expected there will be a component in most if not all regenerated coniferous stands, this should be acknowledged.
- for the last five years, all pine stands have been planted so there's been no reliance on natural regeneration in analysis unit 2.
- units 7 to 10 have been 100 per cent regenerated artificially to spruce or pine on Canfor's forest licence A18154.

Slocan-LP says it's unclear whether

not-satisfactorily restocked (NSR) areas will follow "existing" or "managed" stand yield information, and what species the NSR areas will be regenerated to.

Silvicultural Treatments
Slocan-LP says the assumption that brushing is expected in deciduous-leading analysis units is too broad. This should be applied only to units 11 to 14, according to the company.

Canfor objects strongly to the assumption that all plantations older than 10 years are not being managed. They make the following points:

- since 1987, all forest licence blocks have been managed intensively by Canfor (planted with spacing control and brushed with herbicides or manual methods).
- on pre-1987 blocks, the company estimates that 90 per cent were planted and most have been brushed and/or spaced through FRDA and FRBC projects.

Canfor says these stands must be considered as managed, and managed stand yield tables must be used to project volumes.

Utilization Standards
With regard to small pine harvests, Canfor says that while some 7.5-cm tops do come in to the mill, they believe the standard current practice would be to harvest to a 10-cm top given the distance from town of most of these stands.

Riparian Areas
Canfor makes a number of comments about management of riparian areas. With regard to lakes, the company says the vast majority fall into the L3 class, which has no reserve and a 30-metre riparian management area (RMA). Canfor says since values associated with these lakes would generally be considered relatively low, a maximum buffer of 15 metres for lakes is appropriate.

With regard to wetlands, Canfor says most of the TSA falls under the section of the regulation dealing with wetlands larger than 1000 hectares, which require no buffer or RMA. As a minimum, the company says Supply Block F should have no buffer on all wetlands.

Canfor expresses concern about the methodology used for stream classification:

- many streams on TRIM maps which would meet fish-bearing criteria in Table 12-b either do not exist at all in the field or do not meet the definition of a stream.
- in cutblocks where formal assessment have been done, most of the streams on slopes less than 20 per cent have been shown to be non-fish-bearing, usually due to a lack of suitable habitat or because they disappear before joining larger fish-bearing streams.
- applying 30-metre buffers on "fish-bearing streams" seems excessive when 90 per cent of them are classed as S4s which have no required buffer and only a 30-metre RMA.
- the 15-metre buffer on non-fish-bearing streams is incorrect; generally no buffer is applied as stream banks are protected by a five-metre MFZ (machine-free zone).

Canfor recommends a 15-metre buffer on fish-bearing streams and no buffer on non-fish–bearing streams.

Landscape Biodiversity
According to Canfor, the sensitivity analysis on the biodiversity emphasis options should be based on the resource management zones in the Fort St. John Land and Resource Management Plan (LRMP), rather than landscape units. The company says some proposed landscape units have emphasis options that contradict the LRMP's direction, and the biodiversity strategies were a key component of the compromises the forest industry made to achieve consensus in the LRMP.

Stand Level Biodiversity
Canfor requests clarification on how wildlife tree patch (WTP) percentages are to be modeled to avoid double deductions on buffered creeks that often are included as WTPs. The company suggests the deduction for

WTPs be reduced by the amount of area buffered on creeks, wetlands and lakes, since the vast majority of buffered areas in the THLB will at some time in the future be included in a WTP.

Unsalvaged Losses
Canfor says the assumption that the TSA loses 144,571 cubic metres annually to fire, from the THLB, is excessive. The company says they understand these numbers were based on gross volume over the entire land base, and maintain that since more than half the TSA is not in the THLB and since fires occur more frequently outside the THLB, this number is likely highly exaggerated. Canfor recommends accelerating the more detailed assessment of this factor, as the implications to the harvest level are significant.

Timber Supply Area Analysis Report

Deciduous Timber Harvesting Land Base
Slocan-LP OSB Corporation recommends the inclusion of certain problem forest types to provide optimum flexibility in operational planning and to examine the potential for increased harvesting in deciduous forests.

With regard to non-merchantable forest types, Slocan-LP notes that the timber supply analysis excluded almost all cottonwood- and birch-leading stands from the THLB. The company says their supplementary analysis shows that about 25,500 hectares of these stands could be included. In addition Slocan-LP says that deciduous-leading stands with a black spruce component greater than 30 per cent should not have been excluded from the THLB as at least some of these stands can be used in the OSB plant scheduled for construction.

With regard to low productivity sites, Slocan-LP says the site index cut-offs used in the analysis are very conservative. Applying the same cut-off used in the Dawson Creek TSA (10.5 metres) resulted in an additional 66,900 hectares of immature aspen stands and 27,300 hectares of aspen-pine stands being added to the deciduous THLB.

The combined effect of making the above changes is a 36 per cent increase in the deciduous THLB (to 441,600 hectares), according to Slocan-LP.

Coniferous Timber Harvesting Land Base
Canadian Forest Products (Canfor) expresses concern that the coniferous THLB has been overestimated, contributing to a significant overestimate of coniferous volumes. Canfor makes the following points.

Inventory Data
Canfor expresses concern that the TSR2 methodology may significantly overestimate the THLB. The company compared data from the Vegetation Resources Inventory (VRI) Phase I in the Halfway/Graham areas with the data used to develop the base case. Canfor says the result was that the total THLB is almost 10 per cent smaller using VRI data. The company expresses the belief that similar or greater reductions to the THLB may apply throughout the TSA, and recommends this uncertainty be recognized as a significant downward pressure on the coniferous base case harvest flow.

Inoperable Sites
Canfor notes that the amount of inoperable has decreased by 69 per cent from the TSR1, but very little information is provided regarding the methodology used. The company recommends that the uncertainty resulting from the lack of detail in operability mapping (at a scale of 1:250,000) be considered a downward pressure on the base case harvest flow.

Wildlife Tree Patches
Canfor says the two per cent reduction for WTPs is insufficient. The company points to a recent assessment of practices on 77 of their cutblocks that showed an average of 8.2 per cent of productive forest assigned to

WTPs (the retention target was 4.4 per cent). An assessment of 25 small business program blocks indicated an average WTP retention of 12 per cent and a target of 4.4 per cent. Canfor recommends this level of practice should be considered a downward pressure on the base case harvest flow.

Roads, Trails and Landings (RTLs)
Canfor notes that in TSR1 a factor of 6.39 per cent was used to account for future RTLs, and this has been reduced to 0.63 per cent in the present analysis. The company conducted two reviews of blocks completed and planned, which indicated a permanent road loss of 4.3 to 4.5 per cent within cutblocks. Canfor makes two recommendations:

- the rationale for 0.63 per cent loss for future roads be reviewed.
- the potential overestimate of the THLB (5.76 per cent) due to the impact of RTLs be considered a downward pressure on the coniferous base case.

Environmentally Sensitive Areas
Canfor expresses the opinion that terrain stability impacts on the THLB have been underestimated, based on the results of recently completed terrain stability inventories covering more than one-third of the company's five-year development plan area. The company makes two recommendations:

- 100 per cent of environmentally sensitive areas with a sensitive soil label be removed from the THLB.
- the uncertainty around the amount of unstable terrain be considered a downward pressure on the coniferous THLB.

Special Management Zones
Canfor says significant restrictions on harvesting are expected in all special management zones (SMZs), and this is not recognized in the timber supply analysis. They point to the Graham River drainage where the 11,000 hectares available for harvesting is substantially less than the THLB. Canfor recommends that these anticipated restrictions on harvesting in SMZs be recognized as a potential downward pressure on the base case harvest flow.

Area Deferrals
Canfor notes that the timber supply analysis does not consider restrictions imposed on harvesting in the Halfway River First Nation Treaty Entitlement Claim Area. The company says this area has been deferred from harvesting indefinitely and should not contribute to the THLB at this time.

Oil & Gas Exploration
Canfor expresses the opinion that the impact of current and future oil and gas activities has been significantly underestimated. The company says no reference is made to future pipeline or well-site impacts, despite heavy exploration in the region, and makes the following points:

- in 2001, Canfor staff responded to 87 new oil and gas referrals, each of which involved THLB deletions within existing plantations.
- referrals also included a number of intensive 3D seismic projects covering hundreds of square kilometres.
- the company annually purchases 30,000 to 50,000 cubic metres of salvage timber primarily from well sites and pipeline development. This suggests at least 120 to 200 hectares of productive forest land is being removed each year from the THLB.

Canfor recommends that oil and gas land base losses should be recognized as a downward pressure on the base case harvest forecast.

Existing Forest Inventory
Canfor says the results of the inventory audit indicate very significant limitations on the ability of existing inventories to accurately reflect the productivity of coniferous forests in the TSA. They make the following points about the audit:

- when only the coniferous component is considered, the average volume at 17.5-cm utilization was 27.8 per cent lower than the predicted inventory volume.
- average heights drop from 22.44 metres to 19.54 metres, which may also result in a portion of the THLB falling below minimum harvest volume criteria.
- of the 20 plots sampled, only 15 per cent of the polygons would have remained in the same inventory group.

Canfor expresses additional concern about inventory mislabeling. They cite two examples:

- stands in areas with older inventories that are typed "S" are assumed in the inventory to be primarily white spruce when in fact a portion of them are black spruce-leading.
- areas typed as pine-black spruce are frequently actually black spruce-leading, and should not contribute to the THLB.

Canfor makes two recommendations:

- the uncertainty about the accuracy of the inventory must be recognized, as it may result in significant downward pressures on the coniferous base case harvest flow.
- the urgent need to complete a VRI inventory must be confirmed.

Minimum Harvestable Ages

Slocan-LP says MHAs need to be adjusted to better reflect the commercial rotation age of deciduous stands. The company says the MHA for many analysis units seems to be higher than needed, and provides a scenario in which lowering the MHA increases the mature deciduous growing stock from 35.3 million cubic metres in the timber supply analysis to around 42 million cubic metres in their supplementary analysis.

First Nations

Land Resource Management submits a letter on behalf of several Treaty Eight First Nations with traditional territory within the Fort St. John TSA, advising that a submission is forthcoming, within the next few weeks. The letter expresses confidence that the chief forester will ensure the process includes comments that will assist the Ministry of Forests to meet the legal requirement to adequately consult First Nations, especially before any changes are made that could affect treaty and aboriginal rights.

The joint submissions from the Saulteau First Nations/West Moberly First Nations says they cannot meaningfully or effectively participate in consultations (such as the Timber Supply Review) unless they have the resources to undertake their own review and/or analysis. They express dismay that despite their repeated requests for capacity funding and despite many court decisions on the Crown's obligation to consult with First Nations, their rights, title and interests — and the legal obligations of the ministry — continue to be disregarded. The First Nations say they will insist on the Province's strict compliance with its legal obligations.

The joint submission also notes the importance of the Timber Supply Review and its impacts on their ability to exercise their Treaty and Aboriginal Rights guaranteed by Treaty 8, especially with regard to a sufficient land base to sustain their culture.

Harvest Priority

Slocan-LP says the harvest priority should be adjusted to give equal weighting to deciduous and coniferous stands. The company says there's a need to accelerate the deciduous harvest to capture older aspen stands that are on the verge of decay and deterioration or conversion to leading conifer, noting that the inventory suggests about 12 per cent of deciduous stands are currently older than 120 years. Slocan-LP also maintains that the vastly shorter regeneration delay of deciduous stands makes them a better candidate for harvest selection compared to an adjacent mature coniferous-leading stand.

Canfor says that operational harvest sequencing places little emphasis on priority harvest ages, due to the scattered distribution of merchantable timber. The company makes two recommendations:

- the sensitivity analysis in which harvest priorities were removed be recognized as the better depiction of actual harvest scheduling.
- it be recognized that harvest priorities used in the base case overestimate the sustainable harvest level by about 10 per cent.

Other Comments

Most submissions comment on factors or issues other than those specifically covered by Timber Supply Review documents. These comments are summarized in this section.

Timber Supply Review Process

Slocan-LP says the definition of analysis units in the *Data Package* is difficult to follow, and suggests consideration of a revision as the order in which the criteria are applied may affect the distribution. The company raises specific questions about the small pine analysis unit and about the approach to harvest scheduling. Slocan-LP also says it's unclear if the timber supplies for coniferous-leading stands and deciduous-leading stands will be assessed simultaneously to properly account for adjacency and seral stage requirements.

Canfor identifies a gap in the definition of one analysis unit and also makes the following recommendations regarding proposed sensitivity analyses:

- the proposed analysis of harvesting only in supply blocks A, B, C and D should not apply to the coniferous component, since Canfor has operated and continues to operate in all supply blocks.
- the "land base-volume exclusion" sensitivity issue should be reviewed. Including coniferous mixedwoods is likely of much less value than, for example, analyzing deciduous mixedwoods.
- it may be useful to analyze the impacts of retaining or not retaining spruce understory in aspen and mixedwood stands.

Tenures

In his submission, George Hauber encourages the granting of more woodlot licences, for the following reasons:

- average stumpage is more than double the provincial average.
- employment is much greater.
- money is all spent locally.
- work is distributed throughout the year, creating employment for seasonal workers from the oil and gas sector and for First Nations people.

Hirise Holdings Ltd., which operates a value-added mill at mile 65 of the Alaska Highway, outlines their need for a secure source of timber. The company has located good local and international markets for its varied products, and anticipates expansion of its activities. They are requesting tenures that would give them at least 30,000 cubic metres of coniferous and 20,000 cubic metres of deciduous wood. Hirise points out that their mill is Metis-owned and expresses the opinion that local First Nations would support any increase in harvest levels that would be going to their facility.

Harvest Levels

Slocan-LP says the TSA has a robust, underutilized deciduous resource that has the potential to be seriously eroded if not utilized quickly, at or slightly above the current AAC. The company engaged Industrial Forestry Service Ltd. to do a supplementary timber supply analysis due to concerns that the ministry's analysis did not adequately address the physiology and dynamics of deciduous and mixedwood stands in the boreal forest. Details of the supplementary analysis are provided. Slocan-LP says that although the analysis showed the potential for an increase in the

deciduous AAC, the company wants to retain this for the future so any increase can be based on new forest inventory and growth-and-yield information.

Canfor provides examples of significant discrepancies in small pine inventory typing, and recommends careful consideration of the limitations of the current inventory prior to establishment of any small pine harvest level. Overall, Canfor expresses the opinion that the current state of resource information is not reliable enough to support an increase in the coniferous AAC at this time. The company identifies numerous downward pressures as a result of uncertainties about land base and inventory data. The company recommends:

- the coniferous AAC be maintained at its current level until more reliable inventory information becomes available.
- the chief forester should identify and implement opportunities to improve the information base prior to the next Timber Supply Review.

Appendix 1

Submissions received by the Fort St. John Forest District

Submissions received on the Data Package

Forest industry
Slocan-LP OSB Corporation
Canadian Forest Products Ltd.
Geo. Hauber, president Peace River Woodlot Assoc.

Submissions received on the Timber Supply Analysis Report

First Nations
Land Resource Management (First Nations consultant)
West Moberly and Saulteau First Nations (2)

Forest industry
Hirise Holdings Ltd.
Canadian Forest Products Ltd.
Slocan-LP OSB Corporation